Supersedes Naturalist (Maunde) 1836-39;
and Naturalist (Morris), 1851-58;
As Naturalist, Journal of the West
Riding Consolidated Naturalists'
Society, May 1864 - April 1866;
Naturalist and Field Club
Journal, May 1866 - April 1867;
Naturalists' Journal of the
Yorkshire naturalists' union and
general field club record, 1877-Jl.
1884

QK1
.N32788
1891

THE

NATURALIST:

A

MONTHLY JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND.

EDITED BY

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1891.

LONDON:

LOVELL REEVE & CO., 5, HENRIETTA STREET, COVENT GARDEN, E.C.
McCORQUODALE & CO. LIMITED, CARDINGTON STREET, EUSTON;
AND
LEEDS: BASINGHALL STREET.

1891.

B. (9 Suppl.)
1891-1894

PREFACE.

A STEADILY-CONTINUED increase in the subscription-list may be taken as evidence that 'The Naturalist' is appreciated by the class of readers for whom it is intended, and the large number of notes and articles which the present volume contains, not one of which but conveys an item of information or a fact of some value, shows that a journal of its character is required.

The Editor takes this opportunity of thanking the subscribers for their support, his colleagues in the Editorship for their assistance, and the contributors for the interesting character and great value of the articles and notes which go to make up the present volume.

He has also the pleasure of announcing that in future the duties and responsibility of the chief Editorship will be shared by Mr. Edgar R. Waite, F.L.S.

The Editors trust that all their present subscribers and contributors will continue to support them, and they are also desirous to have the means of giving illustrations, regularly if possible, at all events occasionally, and therefore propose to circulate an appeal for a large increase in the subscription-list, to enable this to be pecuniarily possible. They trust to have the influence of their present supporters to the same end.

THE NATURALIST

For 1891.

ADDITIONS TO THE YORKSHIRE LIST OF LEPIDOPTERA FOR THE DONCASTER DISTRICT.

HERBERT H. CORBETT, M.R.C.S.,

Doncaster.

THE following species of Lepidoptera having been noticed by me at or near Doncaster during 1889 and 1890, and not appearing in Mr. Porritt's list for that district, and in some cases not occurring in the county list at all, may be worthy of record. Some species are so common that they have probably been omitted from the local lists purposely. Those that do not occur in the county list are marked with an asterisk.

Orgyia pudibunda. Larva in Wheatley Wood.

Eupisteria heparata. Common among Alders in Wheatley Wood.

Acidalia scutulata. Common in Wheatley Wood.

Acidalia immutata. Abundant in damp grassy places in Wheatley Wood.

Cabera exanthemaria. Wadworth Wood.

Hybernia aurantiaria. Larvæ abundant in Wheatley Wood.

Hybernia defoliaria. Abundant in all the woods.

Larentia pectinitaria. Common in Wheatley Wood.

Melanthia rubiginata. Common among Alders in Wheatley Wood.

Melanthia ocellata. Common in Wheatley Wood.

Melanippe rivata. Common in weedy parts of Wheatley Wood.

Cidaria psittacata. One at light in Doncaster.

Dicranura vinula. Common generally.

Pygæra bucephala. Ditto.

Bryophila perla. Common on a wall in Thorne Road.

Leucania comma. Common in Wheatley Wood.
Xylophasia scolopacina. In Wheatley Wood.
Agrotis nigricans. Common at sugar in Wheatley Wood.
Agrotis tritici. One at sugar in Wheatley Wood.
Noctua C-nigrum. Common at sugar.
Noctua triangulum. Not common. A few at Wheatley.
Noctua umbrosa. Common at sugar in Wheatley Wood.
Orthosia lota. Common at sugar in Wheatley Wood.
Orthosia macilenta. Ditto ditto.
Anchocelis rufina. Abundant at sugar in Wheatley Wood.
Anchocelis pistacina. A few at sugar in Wheatley Wood.
Hecatera serena. One at rest on a wall at Balby.
Epunda viminalis var. **obscura.** Abundant in Wheatley Wood.
Plusia iota. Common at Lonicera flowers in Wheatley Wood.
Plusia V-aureum. Ditto ditto.
Gonoptera libatrix. Common at Doncaster.
Mania maura. Abundant at sugar near the river at Hexthorpe. I took one very fine light form.
Cataclysta lemnalis. Abundant at Sandal Brick-fields.
Hydrocampa nymphealis. Ditto.
Hydrocampa stagnalis. Ditto.
Scoparia mercuralis. On palings at Doncaster.
Crambus perlellus. One very large one in Wheatley Wood.
Crambus inquinatellus. Abundant but very local at Rossington.
Tortrix adjunctana. Abundant in gardens in Doncaster.
Ephippiphora bimaculana. Common in Wheatley Wood.
*__Semasia ianthinana.__ One on palings in the Town Field, Doncaster.
Carpocapsa pomonana. One in an orchard at Doncaster.
Lemnatophila phryganella. Abundant in Wheatley Wood.
Ochsenheimeria birdella. One at Wheatley.
Gelechia similella. In the Town Field, Doncaster.
Gelechia gemmella. Abundant in Wheatley Wood.
*__Gelechia albiceps.__ One at Doncaster.
Pleurota bicostella. On the Town Moor, Doncaster.
Œcophora flavimaculella. Abundant in Wheatley Wood.
*__Laverna raschkiella.__ Abundant in the larva state at Wheatley wherever the food-plant (*Epilobium angustifolium*) grows.

DISAPPEARANCE OF PLANTS IN YORKSHIRE.

CHARLES P. HOBKIRK, F.L.S., AND P. F. LEE,

Chairman and Hon. Sec. of the Committee appointed to inquire into the Causes of Disappearance of Native Plants in Yorkshire.

THE following report of the Y.N.U. Committee—consisting of C. P. Hobkirk (Chairman); R. Barnes, Saltburn-by-the-Sea; Edward Birks, Sheffield; John Emmet, F.L.S., Boston Spa; Jno. H. Phillips, Scarborough; Rev. W. A. Shuffrey, M.A., Halton Gill; M. B. Slater, F.L.S., Malton; Rev. Wm. Thompson, M.A., J.P., Sedbergh; T. W. Woodhead, Huddersfield; and P. Fox Lee, Dewsbury (Hon. Sec.),—*For the purpose of collecting information as to the Disappearance of Native Plants from their various local habitats*, in connection with a Committee of the British Association formed for the same purpose, the first report of which (the latter) was issued in 1887; the second report in 1889, and the third and last at Leeds in 1890—was drawn up by C. P. Hobkirk, F.L.S., Chairman, assisted by P. F. Lee, Hon. Sec.

REPORT.

Very shortly after its formation in 1889, this Committee prepared and issued to Yorkshire botanists a circular, a copy of which is annexed to this report, asking them to furnish all information in their power on the question of its work. Replies were received only from the following:—M. B. Slater, Rev. W. A. Shuffrey, R. Barnes, P. F. Lee, and C. P. Hobkirk, which, as reported by the Recorder of the British Association Committee, is barely 10 per cent. of the applications sent out; but the Committee trust for better results another year, and beg to impress upon their brother botanists in the county the desirability of their active co-operation. Yorkshire should, from its extent, and the number of its botanists, stand the foremost county in England in this work.

As a testimony to the work already done, the following paragraph from the British Association's Third Report should act as an incentive to those who have not already sent in their contributions:—

'In the collection of the Yorkshire records the Committee has to express its great indebtedness to the active assistance of an influential local Committee formed by the Yorkshire Naturalists' Union, Mr. C. P. Hobkirk being chairman. This Committee apparently experienced a like difficulty to ourselves in inducing local botanists to take the needful trouble in order to send in reports.' The Y.N.U. Committee sincerely hope and trust that this reproach may be speedily removed. The British Association Committee further

remark that 'the partial or complete extirpation of ferns forms a considerable portion of the lists of the Committee's correspondents, the tourist in part, but in a greater degree the "collecting dealer," being held responsible. The Committee also particularly regrets to have to draw attention to the rapidly approaching extermination of *Cypripedium calceolus* and hopes that strenuous efforts will be made to protect it in its few remaining stations.' This being a Yorkshire plant—or at any rate a recorded one—is well worthy of our attention.

The British Association Committee further remark that its 'various correspondents are practically unanimous in expressing a wish that in some way the law of trespass or of wilful damage should be brought to bear upon the 'collecting dealer' without the systematic ravages of whom they believe that any approach to extermination would in most cases be impossible.'

Amongst the Yorkshire plants recorded in their third report are the following:—

39. **Trollius europæus** L. Gradually becoming much rarer round Richmond (E. B. Walton).

152. **Crambe maritima** L. Much scarcer on the sands at Coatham (R. Barnes).

291. **Geranium sanguineum** L. Scarcer on coast sand-hills between Redcar and Marske (R. Barnes).

294. **Geranium phæum** L. Now very rare round Richmond (E. B. Walton).

372. **Astragalus hypoglottis** L. Formerly plentiful in Langton Wold near Malton, but is now nearly extinct, owing to the pasture being ploughed up. Is still found in small quantity on some grassy banks near (M. B. Slater).

416. **Rubus Idæus** L. Formerly plentiful in Dungeon Wood near Huddersfield, but destroyed by railway (C. P. Hobkirk).

611. **Eryngium maritimum** L. Very rare, if not extinct, at Lazenby, Redcar (R. Barnes).

928. **Pyrola rotundifolia** L. Formerly at Birch Cave, near Middleton-one-Row; but now very rare, if not extinct (R. Barnes).

934. **Statice Limonium** L. Formerly very abundant in marshes between Coatham and Middlesbrough; now scarce (R. Barnes).

944. **Primula farinosa** L. Gradually becoming much rarer round Richmond (E. B. Walton); formerly plentiful in a marshy field near Darlington Waterworks, now much scarcer,

probably from botanists and others (R. Barnes). Formerly on stream-side under Gordale Scar, but now apparently extinct, probably from collectors (C. P. Hobkirk).

979. **Menyanthes trifoliata** L. Wet places, Littondale, 700 ft., extinct through drainage (W. A. Shuffrey).

1091. **Lathræa squamaria** L. Reference is made (W.H.) to a habit this plant is said to possess of disappearing from a station for the time being and re-appearing in exactly the same spot after an interval of thirty or forty years. Can instances of this be given?

1344. **Epipactis palustris** Crantz. Once not uncommon at Hell-kettles near Darlington, but now almost extinct, being eradicated by botanists and collectors (R. Barnes).

1361. **Ophrys muscifera** Huds. Has disappeared from a wood in Littondale (W. A. Shuffrey). [Was seen about five years ago, but not since.]

1369. **Cypripedium Calceolus** L. Has disappeared from the woods on south side of Littondale through 'botanical robbers' (W. A. Shuffrey). [Similar reports received as to Durham stations.]

1424. **Paris quadrifolia** L. Has gradually become much rarer round Richmond (E. B. Walton). Formerly in woods near Storthes Hall, Huddersfield; apparently now exterminated by collectors (C. P. Hobkirk).

1772. **Asplenium viride** Huds. Is much scarcer in all its Teesdale localities, Falcon Clints, Greenfell, etc., through tourists and collectors (R. Barnes).

1773. **Asplenium Trichomanes** L. Formerly in Dungeon Wood near Huddersfield, in clefts of rocks, but is now extinct, partly from collectors, and finally by the making of a railway (C. P. Hobkirk).

1782. **Scolopendrium vulgare** Symons. Formerly grew profusely in the neighbourhood of Richmond, but is now becoming scarce, in consequence of the depredations of professional fern collectors (E. B. Walton). The same is reported from Hazelgrove, Saltburn, and other neighbouring glens (R. Barnes).

1783. **Woodsia ilvensis** R.B. Formerly in several localities in Teesdale, but now quite extinct through the action of collectors (R. Barnes). This was its most southern English station.

1788. **Polystichum Lonchitis** Roth. Formerly in several localities in Teesdale, but now quite extinct—'collectors' again (R. Barnes). Rocks in Littondale in the high pastures; now extinct; botanical robbers, and possibly also severe weather (W. A. Shuffrey).

1806. **Osmunda regalis** L. Formerly (thirty years ago) in Marsh Wood, Huddersfield; now gone—land built upon (C. P. Hobkirk).

1807. **Ophioglossum vulgatum** L. Formerly on the banks at south side of Littondale, but has not been seen for the last five or six years (W. A. Shuffrey).

In addition to the above, Mr. P. F. Lee reports the following:—

Ranunculus circinatus Sibth. and

Sparganium simplex Huds., as having been destroyed at Coxley Dam near Dewsbury, by the clearing-out of the ponds for manufacturing and pleasure-boat purposes.

Chlora perfoliata and **Xanthium strumarium** also referred to in his report are not *native* plants of the district.

Campanula latifolia L. Is also almost eradicated from the Hunger-hills district near Mirfield.

Mr. M. B. Slater also reports on *Paludella squarrosa* L., long since destroyed at Terrington Carr by the draining of the bog; also at the same place and for the same reason, *Thuidium blandovii* and *Camptothecium nitens*. These are not included in British Association list, as they do not include mosses in their programme.

In conclusion, this Committee requests to be re-appointed, as there is still much work to be done, and they hope for a larger measure of success during the coming year.

NOTES—ORNITHOLOGY.

White-tailed Eagle in Northumberland.—A female of the above species was shot at Esholt, on the estate of Mr. Bainbridge, on Dec. 1st. It was in the second year's plumage. Length, 3 ft. 3 in.; expanse of wings, 7 ft. 6 in.; weight, 10 lbs. 6 oz.; contents of stomach, Rabbit. There were two birds, but the other managed to escape. The one shot I saw in the flesh at Mr. Duncan the naturalist's, on arrival, and it is a magnificent specimen, in beautifully bright plumage.—H. T. ARCHER, Newcastle-on-Tyne, December 18th, 1890.

Eared Grebe near York.—A fine specimen (sex undetermined) of the Eared or Black-necked Grebe (*Podiceps nigricollis*) was shot on the Ouse near York, October 23rd, and brought me in the flesh. It has since been stuffed and set up by Mr. Helstrip. In the Handbook of the Vertebrate Fauna of Yorkshire (1881) this species is recorded as having occurred in Yorkshire on eight occasions only. This bird is now in my possession. Would some one please inform me of the dates of any other occurrences?—W. HEWITT, 6, Howard Street, Fulford Road, York, Dec. 13th, 1890.

DISAPPEARANCE OF PLANTS IN CUMBERLAND.

WILLIAM HODGSON, A.L.S.,
Workington, Cumberland.

THE following is a list of plants that have disappeared from old and well-authenticated stations within the county of Cumberland, with the probable causes of extinction. The numbers and nomenclature are those included in the London Catalogue of British Plants, 8th ed.

Ivy-leaved Water Crowfoot. (22. *Ranunculus hederaceus.*) This species is mentioned as '*Hedera aquatica*—water-ivy or ivy-leaved duck's-meat' in Bishop Nicolson's list, and stated to grow, along with the following, 'in the cittadel pond at Carlile.' 'Cittadel' and pond have alike disappeared, the site being now occupied by the Nisi Prius Court in almost the heart of the present city.

(23. *Ranunculus palustris rotundifolius* var. *sceleratus.* See the foregoing.)

Green Hellebore. 'Fellin girs.' (40. *Helleborus viridis.*) This plant has been annihilated at its old quarters at Threapland Ghyll, near Aspatria, owing to the working of limestone quarries for the supply of stone to the iron furnaces at Maryport.

Smooth Round-headed Poppy. (54. *Papaver Rhœas.*) Not entirely extinct, but greatly diminished in number within living memory, owing to the gradual abandonment of cereal tillage all over the county. *P. dubium* and *P. Argemone* keep their ground much better.

Wild Wallflower. (75. *Cheiranthus Cheiri.*) Mentioned by Bishop Nicolson 200 years ago, in the following terms :—'On the walls of the Castle and Abbey at Carlile—copiosè.' Mr. Duckworth, late of that city, in his 'Wild Flowers round Carlisle' pronounces it to be extinct there now. No reliable reason can be assigned for its disappearance. On many of our old castles and abbey walls it is still in evidence.

Wild Sea-kale. (152. *Crambe maritima.*) Reported by the Rev. John Harriman as plentiful on the coast between Maryport and Workington, at the commencement of the present century; where I have seen the plant in my early days. It has quite perished, owing partly to tidal encroachments, and yet more to the establishment of extensive iron works and the accumulations of 'slag' on ground once covered with sea-kale.

Pale Streaked Geranium. (292. *Geranium striatum.*) In Mr. H. C. Watson's supplementary list for Cumberland, vide 'New Botanist's Guide,' p. 661, we read as follows: '*Geranium striatum* is said to have been found between Flimsby (clearly a misprint for Flimby) and Workington, opposite the first gate after the road has turned from the valley of the Derwent to follow the coast towards Maryport.' The station so explicitly defined here is now entirely built upon, and covered by streets of houses occupied by the workmen employed at the West Cumberland Iron and Steel Company's extensive works. The plant is found elsewhere within the county, but its claim to rank as indigenous here cannot be allowed.

Narrowest Bird's-foot Trefoil. (369. *Lotus angustissimus.*) Another plant of the adventive type which came up about twenty-five years ago upon a newly-formed railway slope near Bullgill Station on the Derwent Branch Railway, but gradually decreased in number for eight or ten years, and is not now to be found.

Round-leaved Sundew. (574. *Drosera rotundifolia.*) *Ros solis folio rotundo* of the Bishop's list; located by him in Mr. Richardson's Birch Close at Great Salkeld, near Penrith, of which parish his Lordship was rector prior to his elevation to the See of Carlisle. On inquiry last year on the spot, I was informed by an aged farmer that within his own recollection Birch Close had been drained, and Sundew, Bog Bean, White Rot, etc., had all vanished.

Venus's Comb. (643. *Scandix pecten-veneris.*) Near St. Nicholas, Carlile (Bishop Nicolson). Streets and railways now occupy the position indicated.

Fistulous Water-Dropwort. (651. *Œnanthe fistulosa.*) Until about 1874, grew on the edge of Salta or Saltom Moss, near Allonby. Has not been seen for four or five seasons, and seems to have perished altogether; cause unknown.

Spignel or Bald-money. (661. *Meum athamanticum.*) Grew formerly at Fell-End, in Ennerdale, on the left bank of the river Ehen; now, however considered as extinct. No cause assigned.

Small Blue Fleabane. (733. *Erigeron acre.*) Grew very sparingly upon the village green at Dalston, near Carlisle; but a new highway formed across the green some six or seven years ago, entirely destroyed the station, and slight hope is entertained of the plant's re-appearance.

Leopard's Bane. (779. *Doronichum Pardalianches.*) Grew on the west side of the fish-pond at Brayton Hall, Aspatria, for many years ; was probably at best a garden outcast, and is now considered as extinct altogether.

Purple Goat's-beard or Salsafy. (894. *Tragopogon porrifolius.*) In Bishop Nicolson's MS. list (1690) occurs the following entry :—' Anglicum non credit Johs. Ray.—About *Rose*, also in the fields about Carlile.' Rose Castle, about six miles from Carlisle, is the seat of the Bishops of the diocese. Born and brought up in its immediate neighbourhood, I feel satisfied that no such plant exists there now. About 1856 several plants sprang up on a newly-dug grave in the churchyard of Aspatria, during my residence there.

Bird's-eye Primrose. (944. *Primula farinosa.*) At the close of last century was fairly plentiful in the meadows about Aspatria, where it is not now to be found. Draining and improved systems of agriculture are responsible for the change. In the upland valleys of the Lake District it still maintains its ground.

Calathian Violet. (973. *Gentiana pneumonanthe.*) According to the Rev. John Harriman, whose records as a rule are exceedingly reliable, this plant formerly grew 'in a field between Maryport and Flimby ; 200-300 yards from the latter.' A residence of five years at Flimby enables me to say with confidence that no such plant exists there now. Probably extinct through drainage. I well remember a fine spring of water, overgrown with cresses, on the village green, which also has disappeared.

Bog Bean. (979. *Menyanthes trifoliata. Trifolium palustre sive paludosum* of the older writers, see No. 574.)

Black Night-Shade. (1016. *Solanum nigrum*) = *S. vulgare officinarum.* 'Under the walls at Carlile.' Now quite extinct there, and only sparingly found in any part of Cumberland. Now at Maryport ballast-heaps.

Deadly Night-Shade. (1018. *Atropa belladonna*) = *Solanum lethale.* 'On and under the walls at Carlile, over against the Abbey Mill. Same as the preceding.

Moth Mullein. (1026. *Verbascum blattaria.*) Mentioned by the Rev. Jno. Dodd, Vicar of Aspatria in 1800, as plentiful in the church-yard there. The plant was quite unknown at that station in 1850 ; but in 1872, when the adjacent vicarage came to be rebuilt, and the garden levelled anew, the plant reappeared in hundreds.

Tooth-wort. (1091. *Lathræa squamaria.*) I take leave to introduce this species for the purpose of stating that I have reliable evidence of its tendency to abandon its stations in a temporary fashion, as it were; only to make its appearance afresh after an interval of 30 or 40 years. This peculiarity was first mentioned to me by my late venerable friend, the Rev. Robert Wood, vicar of Westward, near Wigton, for upwards of 60 years. The late vicar was an excellent and reliable botanist.

Catmint. (1128. *Nepeta cataria.*) = '*Mentha cataria*, nep or catmint. In the Abbey grounds, and under the walls at Carlile.'

Motherwort. (1147. *Leonurus cardiaca.*) '*Inter rudera*, as in the Abbey at Carlile.' At Flimby. The only place where Motherwort now exists near the city is in the church-yard at Grinsdale.

Black Horehound. (1155. *Ballota nigra.*) 'About the walls at Carlile.' This, like the two preceding species, is no longer in evidence at or near the city of Carlisle. At Workington Marsh.

Sand Plantain. (1169. *Plantago arenaria.*) This alien was noticed growing abundantly in a flax crop at Flimby Woodside Farm in 1884, associated with *Adonis autumnalis* The seed used was probably from an ill-dressed sample. Both plants disappeared; but the plantain has since been noted on ballast-heaps both at Maryport and Silloth. Now at Barepot near Workington.

Portland Sea-Spurge. (1256. *Euphorbia portlandica.*) In most old plant lists this species is marked as growing on the coast between Maryport and Workington, and especially on the beach at Flimby. Like *Crambe maritima*, it has become extinct, and from the same cause. A single plant was noticed in 1888, close to Flimby Railway Station, which disappeared after a high tide.

Pellitory of the Wall. (1269. *Parietaria officinalis.*) 'On the walls of Carlile, copiosè.' Now extinct. The ancient city walls have been pulled down—only a very small portion remaining. Torpenhow Churchyard wall.

Yellow Star of Bethlehem. (1419. *Gagea fascicularis*) = 'Ornithogalum luteum, sive coepe agraria. In Willie's Wood plentifully.' Willie's Wood (Great Salkeld) was visited in 1889, and on the site was seen a young and dense plantation of spruce and silver firs; no trace of *Gagea*, or indeed of any vegetation, apart from the young timber. A very rare plant in the county now.

Autumnal Meadow Saffron. (1421. *Colchicum autumnale.*) Until about 1864 was fairly abundant in a large meadow,

near the village of Blennerhasset, on the river Ellen. The property then changed hands, and the new proprietor threw down the old hedges, drained the meadows, and reduced them to arable fields: thus this comparatively rare species was extirpated.

Flowering Rush. (1475. *Butomus umbellatus*) = 'Juncus floridus, by the river Caldew, at Carlile.' Non-existent there now. Kirkbride, in river Wampool.

Sea Timothy-grass. (1652. *Phleum arenarium*). This little sea-side grass, once associated with *Crambe maritima*, *Euphorbia portlandica*, *Scandix pecten-veneris*, etc., on the Flimby shore; finally disappeared after a fearful storm in 1884. From St. Bees' Head northward, the sea has been gradually encroaching for many years past.

FILICES.

It is with the deepest regret that I have to treat of the gradual decrease, and probable ultimate extinction, of many of our loveliest ferns. Our mountain woods and bosky ravines are being harried of their treasures by rapacious dealers and reckless tourists to the Lakes, who uproot and carry off whatever attracts their imagination, regardless of the fact that a very small number of the plants so carried off—frequently during prolonged summer droughts—will survive transplantation from the moist and rocky dells of which they formed so striking an ornament. The most eagerly sought after appear to be the Royal Fern (*Osmunda regalis*), the Green Spleenwort (*Asplenium viride*) with its relatives (*A. trichomanes* and *A. marinum*), the Scale Fern—locally, 'rusty-back' (*Ceterach officinarum*), the Hart's Tongue (*Scolopendrium vulgare*), the Brittle Bladder Fern (*Cystopteris fragilis*), the Holly Fern (*Polystichum lonchitis*), and the Oak and Beech Ferns. A few only of the many localities so plundered as above are appended.

Green Spleenwort. (1772. *Asplenium viride*.) Has entirely disappeared from a well-known station at Brandy-Ghyll, a deep gully at the S.W. base of Carrock Fell, and is now quite scarce in any of its remaining habitats.

Scale Fern—"Rusty-back." (1781. *Ceterach officinarum*.) Formerly grew on many of the southern bluffs of Gowbarrow Fells, on Ullswater, where hardly a single specimen now exists. Aira Crag, Yew Crag, and Priest Crag produced the Scale Fern in moderate quantity until about fifty years ago.

Bladder Fern. (1785. *Cystopteris fragilis*.) Associated with the preceding in most of the stations indicated above; has also suffered, though hardly to the same extent.

Royal Fern. 'Bog Onion.' (1806. *Osmunda regalis.*) In Bishop Nicolson's list already referred to (1690), is the following entry: '*Filix florida sive Osmunda regalis*; Thursby Lane, near the gate leading to Crofton.' I am of opinion that no one has seen the Royal Fern near Thursby since the opening of the nineteenth century. Formerly the plant abounded in the neighbourhood of Derwentwater and Borrowdale; now only to be found in gardens or enclosed pleasure-grounds. The time has long gone by when the farmers of Gosforth and the neighbourhood used the dried fronds of Osmunda as a covering for their potato carts, to protect the vegetables from frost, when attending the markets of Whitehaven or Egremont to dispose of their produce.

Considerable modifications in our local botany have taken place within my own recollection, extending over a period of upwards of sixty years. Commons have been enclosed, bogs have been drained, and the land subjected to tillage, whereby the number of moorland and sub-aquatic plants was greatly reduced. Latterly, cereal tillage has been very generally given up, and permanent pastures have multiplied. Poppies, corn-cockle, charlock, fumitory and similar annual weeds are less frequently seen. On the other hand, the construction of floating docks at Whitehaven, Workington, Maryport, and Silloth, has led to the importation of numerous aliens among ships' ballast. This result has been especially marked at Silloth, where large cargoes of foreign grain are imported by Messrs. Carr & Co., the great bread and biscuit manufacturing firm of Carlisle, whose large mills are situated close to the docks. The waste from these works has been singularly prolific of aliens, few of which probably may survive more than two or three seasons, and then disappear.

NOTES—ORNITHOLOGY.

Shoveller near Harrogate.—A specimen of this duck (*Spatula clypeata*) was obtained at Ripley, on Nov. 24th, 1890.—RILEY FORTUNE, Ravensgill, Harrogate, Dec. 17th, 1890.

Flamborough Notes.—Numbers of Stonelarks (*Otocorys alpestris*) have made their appearance again on the Headland. Fifteen, I believe, shot by the same gentlemen this year on the same date as last year. Three more fell by the same gun December 18th, 1890.—MATTHEW BAILEY, Flamborough, Dec. 22nd, 1890.

Bittern at Warrington.—At a meeting of the Warrington Field Club, held on December 19th, Mr. Collins reported that on the 6th December, he had shot a Bittern at Longford, just on the outskirts of the town. The bird was a male in remarkably good feather and was clean shot. It was thin and evidently was suffering from want of food, its weight being 1lb. 14oz. The Bittern is exceedingly rare about Warrington, the previous record being the one given in Morris' British Birds of a Bittern being shot on the banks of the Mersey at Thelwall, in 1854.—W. H. WOODCOCK, Hon. Sec., Town Hall, Warrington, Dec. 22nd, 1890.

EARTH-WORMS OF THE NORTH OF ENGLAND.

Rev. HILDERIC FRIEND, F.L.S.,

President of the Wesley Naturalists' Society, and Vice-President of the Carlisle Microscopical Society, Author of 'Flowers and Flower-Lore' and other works; Idle, near Bradford.

So far as I can learn no list of Earth-Worms has hitherto been published for the North of England. I have, therefore, put together the names of those which I have collected and identified during the past year (1890). It includes a few which are new to Britain, and I have reason to think that I shall be able shortly to add others from Yorkshire. I have notes of some curious variations, if not absolutely new species, but as nothing is gained by too hasty publication, I withhold everything of an uncertain character.

I have marked with an asterisk those which I have not found on record as British, and in each instance the locality is given. I have also added a few synonyms and references for the help and guidance of students. I shall be glad to receive living worms from collectors, with notes on the habitat, etc. Live worms can be sent in *sphagnum*, or other soft moss, in a tin box, and they may be sought for not only in gardens, pastures, and manure-heaps, but especially by the sides of streams, rivers, lakes, and ponds. Some prefer the roots of grass, others lie under stones, while some burrow deep in the mud. When ponds, canals, or lakes are being cleaned out careful search should be made for new species, which are almost sure to turn up, if only the collector is at hand at the right time. Any correspondence on this subject will be welcomed. I may refer the reader to a series of articles which are appearing week by week in the 'North Cumberland Reformer' on this subject. These will, in due course, be published as a 'Handbook of British Earth-Worms.'

1. **Lumbricus terrester** L. Widely distributed. Later writers have altered the name given by Linnæus to *L. terrestris*. The synonyms are *L. agricola*, Hoffmeister; *Enterior terrestre*, Savigny; *L. herculeus*, Dugès; cf. Grube, 'Familien der Anneliden,' Berlin, 1851, p. 99.
2. **Lumbricus rubellus** Hoffm. Banks of Caldew and Eden, Cumberland, July 1890.

3. **Lumbricus purpureus** Eisen. Under droppings at Dalston, in tree stump near Carlisle, and at 2,000 ft. or higher on Cross Fell. Also under droppings near Idle, Bradford.

4. **Lumbricus fœtidus** Dugès. In manure heaps at Kendal and elsewhere, widely distributed. Sometimes found (as at Idle) in fields where dung is used. Known among fishermen as the Brandling, and readily distinguished by its bands of brown and yellow. Syn.: *Enterion fœtidum* Sav.; *Lumbricus olidus* Hoffm.—Grube, p. 99.

5. **Allolobophora mucosa** Eisen. From Kendal, May 20th, 1890; also from Apperley Bridge, Dec. 1890; with some interesting varieties which are under examination. See next.

6. *__Allolobophora turgida__ Eisen. From banks of the river Eden at Carlisle, May 1890. The synonymy of this species and the last is very perplexing, as is also that of the next, which see.

7. **Allolobophora trapezoides** Dugès. River Eden near Dalston, Cumberland, May 1890. The three species just named have not as yet been clearly defined. They have been described at different times as *Lumbricus anatomicus* Dugès, *L. communis* Hoffmeister, *L. caliginosus* Sav., *L. cyaneus* Sav., and *L. ictericus* Sav. Cf. Grube, p. 99; Benham in Q.J.M.Sc., 1886, p. 228. I hope to be able shortly to throw new light on their history.

8. **Allolobophora chlorotica** Rosa. Widely distributed. Varies a good deal in colour—sometimes bright green, with orange clitellum; at other times a dirty yellow. Frequent under stones by the side of ponds, especially where cattle congregate or go to water. River Eden; Mondhill Loch; by small stream near Idle, and elsewhere. Syn. *L. riparius* Hoffm.; *Allolobophora riparia* Eisen; *L. chloroticus* Dugès; *L. viridis* of authors, etc.

9. *__Allolobophora celtica__ Rosa. From a little stream at a considerable height above Langholm, N.B., May 1890. I presume from the name that Rosa's specimens may have come from N. Britain, but have not seen this stated in print.

10. **Allolobophora longa** D'Udekem. From the river Eden—a paradise for the worm-collector. I found only one specimen of this species, which has been referred to Dr. Benham, and confirmed by him; as have several other critical species.

11. *__Lumbricus eiseni.__ 'One quite small red worm, similar in colour to *L. rubellus* is *L. eiseni*, new to Britain' (Dr. Benham *in litt.*, August 2nd, 1890). Found by the Caldew at Cummersdale, Carlisle. Named after Eisen, the helminthologist.

12. **Allurus tetraedrus** Eisen. Widely distributed. Found on banks of Eden, and by Yorkshire streams whenever sought. Immediately recognised by its square tail, and backward movements—whence termed *Lumbricus amphisbæna* by Dugès, and *L. agilis*, Hoffm. I found a beautiful variety near Carlisle which Dr. Benham thinks may merit specific rank. I have named it provisionally *Allurus flavus* n. var. It is very plentiful near Dalston and Cummersdale along with the type, but I have not seen it elsewhere.

13. **Perichæta indicus** Horst. I found one specimen of this pretty foreign worm in a greenhouse, Kendal, May 1890. It has been recorded before from Scotland.

[14. **Lumbricus multispinus** Grube? A peculiar form with setæ in bundles of three from Apperley Bridge, December 1890, under examination].

NOTE—MINERALOGY.

Minerals in Cumberland and Westmorland.—The list given by Mr. Goodchild (Trans. Cumb. and Westm. Assoc.) might be considerably extended by including rock-forming minerals only detected by the microscope; but without going so far as this, one or two additions may be made.

Garnet.—Besides the common red garnet met with in many parts of the Lake District, the greenish-yellow lime-garnet Grossularite occurs at Wasdale Head near Shap Fells. It is imbedded in the Idocrase of the highly-metamorphosed limestone a little west of the farm, and forms dodecahedral crystals one-tenth of an inch to nearly an inch in diameter. In the same locality occurs a browner variety, Essonite.

Vivianite is found as a blue incrustation on the joints of a large quartz-porphyry dyke south of Goodcroft, Rossgill, near Shap, and no doubt in other localities.

Sphene is a constant constituent of the Shap granite, and is richly present in the dark patches of that rock, where it may sometimes be seen with a lens.

Agate.—Some of the best specimens are found in the amygdaloidal cavities of the lavas of Brown Dodd, between Lodore and Watendlath.

Andalusite.—Small lustrous columnar crystals of true Andalusite may be seen on specimens of the highly-altered slates very near the Skiddaw granite in Sinen Gill.—A. H.

A COMPARISON OF THE LEPIDOPTEROUS FAUNA OF YORKSHIRE AND LANCASHIRE AND CHESHIRE.

The Lepidoptera of Lancashire and Cheshire. By JOHN W. ELLIS, M.B.(Vic.), F.E.S.

We very cordially welcome the appearance of this list (which is comprised of the series of papers published in the 'Naturalist') in book form. On comparing it with the 'List of Yorkshire Lepidoptera,' one is at once struck with the closeness in the number of species recorded in the two lists, the total recorded lepidopterous fauna of Lancashire and Cheshire being given as 1,355; that of

Yorkshire as 1,341. And this closeness in numbers is at the present time still more marked than even the two lists show, for since the publication of the Yorkshire list in 1883—omitting *Erastria fuscula*, the record of which I think needs confirmation, and regarding *Scoparia ingratalis* as a form of *S. pyralalis*—the following nineteen species have been added to it:—*Ennomos autumnaria*, *Melanippe unangulata*, *Heliothis peltigera*, *Spilodes palealis*, **Scoparia atomalis*, *Tortrix diversana*, *Phoxopteryx siculana*, *Phoxopteryx diminutana*, *Lobesia servillana*, *Eupœcilia dubitana*, *Semasia ianthinana*, *Depressaria weirella*, *Gelechia tetragonella*, *G. albiceps*, *Dasycera oliviella*, *Laverna phragmitella*, *L. raschkiella*, *Lithocolletis sorbi*, and *Nepticula serella*. This makes the present Yorkshire total 1,360. But the extraordinary closeness of the results in lepidopterological work in the three counties will be best seen by a comparison of the numbers in the various orders, as follows:—

	Lancashire & Cheshire.	Yorkshire.
Diurni	47	48
Nocturni	66	80
Geometræ	204	209
Drepanulæ	3	3
Pseudo-Bombyces	17	19
Noctuæ	217	225
Deltoides	6	8
Aventiæ	0	1
Pyralides	43	49
Crambites	43	39
Tortrices	211	209
Tineina	478	451
Pterophori	19	18
Alucitina	1	1
	1,355	1,360

This is wonderfully close, and shows that the numbers of species known to occur in the two areas are practically the same, for although, as Dr. Ellis says in his preface, he had, during the progress of the work through the press, received records of several species not included, there are several recorded as having occurred which, had the author paid as much attention to lepidoptera of late years as he has to coleoptera, would in all probability have been omitted.

The nomenclature adopted is continental, which we think is a mistake, for it is a nomenclature probably little used by British lepidopterists, and we should hope not likely to become so. Apart from this, we have every praise for this very useful little work.—G. T. P.

* This is doubtless only a form of *S. ambigualis*, but as it is given as distinct in the Lancashire and Cheshire list, it is included here for more accurate comparison.

PEAT DEPOSIT AT FILEY.

Rev. E. MAULE COLE, M.A., F.G.S.

Anyone who will take the trouble to walk along the sands of the Holderness Coast will see, in many places, on the top of the Boulder Clay cliffs, which line the shore, certain stratified deposits of pearly-grey clay, from 1 to 2 or 3 ft. thick, which mark the beds of old dried-up lakes or meres. On examining this clay it is found to consist largely of the comminuted remains of fresh-water shells. The meres, in which they accumulated by sediment, were at one time far from the shore-line, but by the wearing back of the cliffs by denudation have been exposed in section. The length of these lacustrine deposits varies from some thirty yards to a quarter of a mile. In a few instances, notably at Skipsea, the clay is found covered with an accumulation of peat, several feet thick, the lower portion being compact, the upper fibrous containing roots and branches of trees; and in all cases remains of nuts. Bones of the elk, deer, and ox have been found in the peat.

Let us now turn to Filey. In the spring of the present year, a visitor, who wisely employed his time in studying Geological Rambles in Yorkshire, heard that the author was spending a few days in that interesting locality. He called and informed me that he had made a discovery in the cliffs close to Filey, which claimed my attention. On proceeding to the spot, within a couple of hundred yards of the sea-wall on the south, I found the face of the cliff covered with the débris of a peat bed, which had recently been shot down from above. On climbing the cliff, about 70 ft. high, a fine section of peat, in the centre, over 6 ft. thick, was found exposed, resting on a bed of stiff pearly-grey clay, 2 ft. thick. Underneath this was another foot of peat resting on boulder clay.

This is very different from the section given by Phillips, sixty years ago, of the same lacustrine deposit, which is as follows:—'It consists of light-blue clay, peaty clay, blue clay, white clay, and peat, altogether 4 ft. thick, upon sand and gravel.' And the reason is not far to seek, for in the course of sixty years the cliffs must have receded sixty yards or more, and he is describing the outer edge of the old lake bottom, as it then appeared, which contained scarcely any peat, whereas, now, denudation has exposed the mass of peat mentioned above. The 'sand and gravel' which he speaks of has disappeared, having played out its part in causing the disaster which has strewn the face of the cliff with large masses of peat, for doubtless the percolation of rain-water

in the said bed of sand and gravel undermined the peat and produced the landslips which have worn back the top of the cliff. The sea could only attack the bottom of the cliff. On the north side of the deposit, where the beds thin out, there is still a little 'white clay and peat' remaining; the peat, 2 in. thick, rests on boulder clay, and the white clay, 4 in. thick, lies above it, and is succeeded by 1 ft. of light-blue clay, then surface soil.

In the centre of the lake basin, where the peat is thickest, the upper portion consists of 4 ft. of fibrous peat with large pieces of wood intermixed, many with the bark on, of a silvery hue, probably birch. The lower portion, 2 to 3 ft. thick, is more compact, and contains only twigs and small branches; nut shells are plentiful throughout.

Mr. W. Browett, of Coventry, the gentleman who first called my attention to this deposit, was good enough, at my request, to cut out four blocks of peat from different horizons, which, together with other remains, were forwarded to Mr. W. Cash, of Halifax, for determination. Mr. Cash, with the assistance of Mr. W. West, kindly spent much time and trouble in investigating the material forwarded to him, and has presented the following report:—

No. 1.—Full of leaf and stem débris, which is undeterminable.

No. 2.—Contains:—

Mosses.

Polytrichum commune.
Sphagnum acutifolium.
Large spores of *Sphagnum*, probably tetrahedral.

Desmids.

Calocylindrus palangula Breb.
Calocylindrus var. *de baryi* Rabh.
Penium truncatum Breb.
Cosmarium obliquum Nard.(?).
Cylindrocystis diplospora Lund.(?)
Conferva, species.

No. 3.—On splitting the peat, leaves were revealed which may be those of *Salix caprea*, judging by form, dimensions, and venation.

No. 4.—Contains:—

Desmids.

Penium brebissonii Ralfs.
Penium, species.
Cosmarium homalodermum Nard. (a punctate form).
Cosmarium globosum Baln.?
Cosmarium crenatum Ralfs.
Cosmarium undulatum Corda.

Diatoms.

Synedra ulna Ehrenb.
Pinnularia acrosphæria Ralfs.(?)

Other Algæ.

Merismopedia glauca Ehrenb.
Oscillaria, species.
Conferva tenerrima Kutz.
Aphanocapsa, species.
Aphenotheca? species.

5.—Nuts of *Corylus avellana*.

6.—Elytra of Coleoptera.

7.—Wood, but not coniferous, as the large pitted vessels it contains would appear to indicate. Coniferous trees never have vessels

in their secondary wood. The vessels are similar to those of Oak or Willow. The smaller flattened pieces of wood also contain vessels, and are also angiospermous.

From this report it would appear that the peat at Filey was formed at a time when glacial conditions were passing away, and the climate becoming humid and temperate; for the urn mosses are the first to clothe new soil, and the willow and birch can best withstand cold; the oak and hazel are generally found to follow. One cannot fail to be struck with the similarity of the lacustrine peat deposits on the Boulder Clay of East Yorkshire to those of Denmark, described by Dr. James Geikie ('Prehistoric Europe,' p. 485), from the observations of Prof. Steenstrup.

'They (forest bogs) are found in basins of inconsiderable size, which, however, are deep in proportion to their width. Some of the smaller bogs are not much more than 30 yards or 40 yards across. The pot-like depressions, which have been specially examined by Steenstrup, occur in the great drift or glacial deposits that cover so wide an area in Denmark, and appear to have existed at one time as pools and lakelets. This is shown by the appearance at the bottom of the bogs of alluvial clay and marl, with the remains of freshwater organisms and land plants.'

The lakelets on the cliff tops of Holderness have long since dried up. That at Filey, now under discussion (British Association Meeting at Leeds, 1890), has been known to contain water within living memory. It can do so no more, the side seawards having given way by the retrocession of the cliff. It is not unlikely that these ancient pools were not entirely dependent on the rainfall on their immediate surface, but obtained a portion of their water-supply from the natural drainage from higher ground to the east, now denuded. The lowest part of Holderness is that occupied by the river Hull, and, with the exception of Hornsea Beck, escaping from Hornsea Mere, all the streams flow from the coast-line westwards to the Hull, and not into the sea direct.

At Filey, the boulder clay cliffs at Carr Naze, over Filey Brigg, are higher than the lacustrine deposit under review, and doubtless at one time occupied a large portion of Filey Bay itself, extending upwards even to the top of the chalk cliffs at Bempton, where boulder clay is met with, containing large blocks of Teesdale basalt. It was this enormous deposit, now greatly reduced by denudation, of boulder clay, which blocked up the exit of the Derwent eastwards, converted the Vale of Pickering into a lake, and caused the drainage of the moorland to cut a channel through the oolitic range at Kirkham into the Vale of York to join the Ouse.

FUNGI NEW TO WEST YORKSHIRE.

CHARLES CROSSLAND,
Halifax.

THE following have been identified for me since forwarding the note published in 'The Naturalist' for December 1890:—

Agaricus (Collybia) fusipes Bull. var. **œdematopus** Schæff.

Agaricus (Collybia) plexipes Fr. On old stump.

Lactarius camphoratus Fr.

The three plants were gathered in Rough-hey Wood, near Triangle, Halifax, by the writer, on Nov. 17th, 1890. All have been certified by Mr. George Massee.

Ombrophila purpurea Fckl. This pretty Discomycetous fungus was gathered on a stump in Northdean Wood, Nov. 22nd, 1890, by Mr. G. L. Lister, and certified by Mr. W. Phillips, Shrewsbury.

NOTE—BOTANY.

Osmunda regalis in the Lake District.—My attention has been called to a statement in 'The Naturalist' for November 1890, p. 334, which seems to cast some discredit upon the work of the British Association Committee on the Disappearance of Native Plants, etc. It is this: under *Osmunda regalis* in Mr. Grimshaw's 'Notes on the Flora of West Cumberland,' after detailing the occurrence of a few plants of this fern in a dyke between Seascale and Drigg, he adds: 'At the last meeting of the British Association the fern was reported by the Committee for Investigating the Disappearance of Native Plants as *extinct*! (the italics and ! are his). What inference he wishes to be drawn from this is not clear, but it seems to indicate that the said Committee have made a blunder. Had Mr. Grimshaw carefully read the 'Report' I think he would not have inserted this remark. On page 6 of that Report (1890)—under *Osmunda regalis*, Cumberland—it is stated by W. H. that it was 'formerly quite abundant round Derwentwater and Borrowdale, but now extinct.' What connection can there be between this and the Seascale locality? places quite twenty-five miles apart by the nearest line. Besides this, the boundaries of the district given by Mr. Grimshaw for his 'notes' extends at its eastern extremity—the nearest point to Borrowdale—to Wastdale Head, and, if my recollection of the district serves me well, between these points stands the Great Gable and other hills which mark the line of the water-shed between Borrowdale and Wastdale. Thus Mr. Grimshaw may be quite right with his locality, but that does not make the Committee's 'Report' wrong.—C. P. HOBKIRK, Nov. 22nd, 1890.

[Mr. Grimshaw assures us that he had not the slightest idea of imputing any discredit to the British Association Committee when quoting the paragraph which appeared in the newspapers at the time of the meeting of the Association in Leeds, and as the actual report of the Committee does not appear to have been published, neither he nor others had the opportunity of verifying the statement made. He regrets that the statement was published, and, in common with ourselves, is glad to know that the Royal Fern still exists in Cumberland. Long may it continue to do so.—ED. NAT.]

ORNITHOLOGICAL NOTES FROM THE HUMBER DISTRICT IN THE AUTUMN OF 1890.

JOHN CORDEAUX, M.B.O.U.,

Great Cotes, Ulceby, Lincolnshire.

TAKEN as a whole, the season has been much below an average in connection with the arrival of birds. Although some species have been tolerably numerous, others—as the Short-eared Owl, Grey Shrike, and Golden-crested Wren—have been either scarce or absent altogether. The prevailing winds from S. and S.W., and seldom blowing from northerly or easterly quarters. The chief movement of migrants was from the 19th to 21st of October, and for a comparison with the immense number which then came in we must go back to the great rush of 1885, from the 15th to 17th of October.

In preparing these notes I am indebted to Mr. G. H. Caton Haigh of Grainsby Hall for much information; also to communications received from Mr. H. B. Hewetson of Leeds, and Mr. Philip Lawton of Easington.

Wheatear (*Saxicola œnanthe* (Linn.)). July 7th. As early as the first week in July a few young birds on the move, increasing during the month. Aug. 7th, many; 13th and 14th, 'thousands' at Spurn. Oct. 4th, last.

Common Sandpiper (*Totanus hypoleucos* (Linn.)). July 8th. A few returning, seen on the 'beck' and main drains.

Shore Birds. July 20th. During the last week there have been Grey Plover, Knot, Godwit, and Dunlin on the muds near Spurn, and in very considerable numbers.

Redstart (*Ruticilla phœnicurus* (Linn.)). Aug. 11th. First seen, a female; Sept. 3rd, a few on coast; 17th, same, but have altogether been very scarce.

Woodwren (*Phylloscopus sibilatrix* (Bechst.)). Aug. 20th to 23rd. A considerable movement of small migrants between these dates. Amongst various species I saw two Wood Wrens on the 20th in one of the marsh hedgerows, and a pair also in the garden on the 23rd. I never see them in this parish excepting on migration—rarely in spring, but not uncommonly in the autumn.

Golden Plover (*Charadrius pluvialis* (Linn.)). Sept. 1st. Mr. Haigh saw a few at North Cotes, and on the 2nd a flock of about fifty at Grainthorpe. In last week of November an immense arrival in

North-east Lincolnshire in advance of the snow-storm commencing on night of 24th. These appear very soon to have left the district.

Greenshank (*Totanus canescens* (Gmel.)). Sept. 2nd. Some on Grainthorpe and Tetney fitties; fairly common throughout September. At this time the adults have the upper breast and sides of the neck only very slightly streaked.

Ruff (*Machetes pugnax* (Linn.)). Sept. 2nd. Several seen during first week in September. 25th, one which I got in the flesh shot at Tetney has the neck and breast buff, and the darker parts of the feathers of the back and long scapulars with a faint gloss of purple. On November 4th, Mr. Haigh saw three near the sea-bank at Summercotes.

Curlew Sandpiper (*Tringa subarquata* (Güld.)). Sept. 6th. Not very common this year, a few at Spurn, also on the Lincolnshire coast. Mr. Haigh shot three near Grainthorpe on the 17th.

Bar-tailed Godwit (*Limosa lapponica* (Linn.)). Sept. 6th. I examined a very interesting example in the flesh shot by Mr. Haigh near Tetney. It was an adult female and nearly in winter plumage; the tail was a uniform ash colour free from bars. Our autumn Godwits are almost invariably young of the year with barred tails.

Knot (*Tringa canutus* (Linn.)). Sept. 6th. One shot about the same time had the under side marked with large spots of a faded red.

Golden-crested Wren (*Regulus cristatus* (Koch.)). Sept. 6th. Mr. R. M. Barrington, when in a boat off the Speeton cliffs picked up a gold-crest on the water, probably drowned in passage. A few early in October, but have been throughout the autumn remarkably scarce.

Corn Bunting (*Emberiza miliaria* Linn.). Sept. 13th. Mr. Haigh saw an immense flock in a turnip-field close to the coast at Tetney, and evidently fresh arrivals. Occasionally in the autumn I see considerable flocks on our stubbles near the sea, but nothing to compare with this big flock seen and described to me by Mr. Haigh and from which he shot one or two specimens. At Heligoland the common Bunting is an occasional visitor, small flocks of ten to twenty appearing, but is never common.

Little Stint (*Tringa minuta* Leisl.). Sept. 17th. Two caught, by Stubbs the younger, in plover-net on Tetney fitties, and sent to Mr. Haigh. Several at Spurn during the month.

Dusky Redshank (*Totanus fuscus* (Linn.)). Sept. 18th. I saw one in the flesh which was shot by Mr. Haigh at Tetney at

this date; it was a young bird, and had nearly acquired the winter plumage. Four were seen together on the coast early in the month.

Arctic Skua (*Stercorarius crepidatus* (Banks)). Sept. 18th. Several on coast. On Dec. 4th one was caught on the beach at Mablethorpe, which I received in the flesh—an almost uniform dark bird. It is a mistake to suppose Skuas are only seen on passage on the east coast during migration. Many remain all the winter, also at sea on the fishing-banks.

Hoopoe (*Upupa epops* Linn.). Sept. 18th. An immature female was shot at Ashby, near Horncastle.

Thrush (*Turdus musicus* Linn.). Sept. 20th. First flights of thrushes; are now very plentiful in turnip-fields.

Redbreast (*Erithacus rubecula* (Linn.)). Oct. 2nd. A very considerable immigration during the last week in September and early in October; great numbers appeared quite suddenly in this village (Great Cotes), so as to attract general attention. For some days Robins might be heard singing from every tree and bush. On the 22nd also they swarmed along the coast.

Skylark (*Alauda arvensis* Linn.). Oct. 4th, first flights coming in from the sea, travelling east to west during the morning. 7th, great many, and continuous arrivals, day by day, during the month.

Rock-Pipit (*Anthus obscurus* (Lath.)). Oct. 4th, a few on coast; 10th, many; 15th, same. One shot at the latter date has the under-parts buff-yellow, much streaked with dark brown on breast, flanks, and belly.

Jack Snipe (*Gallinago gallinula* (Linn.)). Oct. 8th. Mr. Haigh shot one in a turnip-field on the high wold; 14th and 15th, rush, with Common Snipe. Have been unusually abundant during the season, and I have found more in this parish than I have seen for many years.

Grey Crow (*Corvus cornix* Linn.). Oct. 8th, first; 11th, several, Nov. 20th and 21st, immense arrivals—thousands—at Spurn. with a north wind.

Bittern (*Botaurus stellaris* (Linn.)). Oct. 13th, a fine male shot at Spurn Point by C. Hopper. A week before this, Pye and Hopper, when out in their boat, saw four together making for the land. These passed close to the boat, and they have not the slightest doubt as to the species. They described the flight as very marked, the birds looking 'exactly alike fore and aft,' legs straight out behind, and neck and head in front. On the

4th of December one, a female, was shot at Ulceby, in a field close to his house, by Mr. Frederick Pearson; and the same day, at Wooton, within a short distance of the same place, a Little Auk (*Mergulus alle*) was picked up.

Fieldfare (*Turdus pilaris* (Linn.)). Oct. 15th, first seen. Mr. Haigh writing in 'The Field' says, that at this date he flushed from a clump of bushes near Tetney Lock about one hundred Fieldfares, a score of Mistletoe Thrushes, as many Blackbirds, and a few Thrushes and Redwings. On Oct. 20th, 21st, there was an immense arrival of old birds on the Holderness and Lincolnshire coast. On Nov. 25th, I was sheltering from a heavy cold rain from the eastward beneath the boughs of a low-growing fir on the side of the sea-cliff, near Folkestone, when a flock of fifteen old Fieldfares came in direct from the sea, from the S.E., dropping in perfect silence into the rough scrub. How charmingly they looked in their clean, bright, unsullied plumage fresh in from the salt sea; delicate tints of ash-grey and hazel-brown in contrast with golden-buff on chin and throat. The rich dark-brown patch on the side of the breast is very plainly seen in flight at a considerable distance, and will alone serve to distinguish them on the wing from Mistletoe Thrushes. A very light movement of my part, and, with a low *chuck-a-chuck*, they rose together going inland over the cliff-top.

Snow-Bunting (*Plectrophanes nivalis* (Linn.)). Oct. 19th. I saw a small flight this afternoon amongst rough shingle, evidently newly arrived birds, and more inclined to trust to their feet than to take wing. The rough banks and beds of many-coloured gravel on the Yorkshire coast are always favourite haunts of Snow-Bunting. Everywhere, since last this way, there is evidence of change, wreck, ruin, and waste, and an increasing encroachment on the cultivated land—year by year—now more, and now less, the seaside farms decrease in area. I know one small freeholder who all his life has been tilling the few fields of his little farm under the very shadow of the sand-dune, where through the long summer day you may listen to the song of the bonnie 'bent' linnets and the 'lilt-lilt' of ascending larks. The materials of the wooden out-buildings around his cottage are all of wreck wood, and worked into the structures we read 'Perseverance of Shields,' 'Vesta of Goole,' and such like relics suggestive of the perils of the deep sea. Some day with a northerly gale and full spring-tide the hungry sea will make a clean sweep of homestead and fields. Still the old man sticks to his wooden one-horsed plough, hoping that matters may

last his time. Recently seeing him at his work, I remarked 'Why, John, you've lost your sea-plot?' [one of his fields]. 'Yes sir, I gi'en it her.' 'You mean she's ta'en it, John?' 'Ah, sir; she's heppen fending for hersel', she is; she gets waur and waur, she do; she's remmeled a site o' land sin' last back end' [she is skilful in providing for herself; she gets worse and worse; she has moved much land since last autumn].

Just before the great snowstorm which commenced on the 25th of November, thousands of Snow-Bunting came into the low-lying lands along the coast of Lincolnshire. At Tetney, Mr. Haigh says under dates of November 28th, the present snowstorm has brought us thousands of Snow-Bunting, the fitties and fields near the coast swarm with them, I have never seen so many before.

Brambling (*Fringilla montifringilla* (Linn.)). Oct. 19th, first seen; an adult male shot. Nov. 28th, Mr. Haigh saw a few with Chaffinches at Grainsby.

Short-eared Owl (*Asio accipitrinus* (Pall.)). Oct. 19th. One seen on Kilnsea warren by Mr. Clubley. This is the only example I have heard of this autumn.

Woodcock (*Scolopax rusticula* Linn.). Oct. 20th and 21st. A few on the 19th, and again on the 20th. Night of 20th-21st, immense flight from Withernsea to Spurn Point, which subsequent information shows extended over 200 miles of the east coast, from Flamborough Head to the mouth of the Thames. Wind N., drizzling rain and mist. There was also a second and very considerable arrival on the night of 21st-22nd, and since this date a few stragglers at intervals up to the end of November. Notwithstanding the great arrivals of Woodcock during October and November, very few appear to have been seen or shot in our chief woods. I have this year shot a considerable extent of woodlands, pine and oak, which has always been considered first-rate Woodcock ground, but so far we have only seen and got a couple. I hear the same complaint in other quarters.

Red-necked Phalarope (*Phalaropus hyperboreus* (Linn.)). Oct. 28th. One shot near Easington by Mr. G. Jolland, and received by Mr. P. Lawton in the flesh.

Shore Lark (*Otocorys alpestris* (Linn.)). Oct. 28th, first appearance. A very considerable number throughout November; never so many before. Immense numbers crossed Heligoland early in December.

Swallow (*Hirundo rustica* Linn.). Nov. 4th, one seen near Donna Nook on Lincolnshire coast by Mr. Haigh.

Jay (*Garrulus glandarius* (Linn.)). Nov. 9th. Mr. Haigh thinks there was a considerable immigration about this date, and they have been extremely numerous ever since.

Lapland Bunting (*Plectrophanes lapponicus* (Linn.)). Nov. 18th. Mr. Haigh shot a male in winter plumage on the sand-hills at North Cotes. At a short distance it might easily be overlooked for a Reed Bunting or a young Snow Bunting.

Sheldrake (*Tadorna cornuta* (Gmel.)). Nov. 28th. There was a great flock on North Cotes sands to-day, which Mr. Haigh computes at two to three hundred.

Whooper Swan (*Cygnus musicus* Bechst.). Nov. 29th. Twelve seen, presumably of this species, flying north, near Spurn, all white.

In the autumn also immense flocks of Greenfinches (*Ligurinus chloris*) have come in, also Chaffinches (*Fringilla cœlebs*), at irregular intervals; and the reedy drains near the coast in October swarmed with Reed Buntings (*Emberiza schœniclus*). Tree Sparrows (*Passer montanus*) also have been fairly common. In the late severe weather a pair came for food along with other birds and the Common Sparrow (*P. domesticus*) to the window-box here. They are, however, much shyer and of a more timid nature than the domestic bird, and seem quite unable to assert themselves before their robust cousins. I have also seen some large flocks of Twites (*Linota flavirostris*) near the coast. There have been a very considerable number of Kingfishers (*Alcedo ispida*) since September on the chief streams and drains, and I regret that a great many have been received by the local taxidermists. Some other locally-shot birds seen and examined by me are a Rough-legged Buzzard (*Archibuteo lagopus*), shot at Ruckland near Louth; immature Long-tailed Ducks (*Harelda glacialis*), two adult Goosanders (*Mergus merganser*), adult female Smew (*Mergus albellus*), and a Red-throated Diver (*Colymbus septentrionalis*).

Under date of December 10th, Mr. Haigh sends the following note:—'During the first week in this month a great many swans appeared in the Humber, both Whoopers (*Cygnus musicus*) and Bewick's Swan (*C. bewicki*). Stubbs killed three at one shot out of a herd of 30 to 40 and his son killed one from a herd of nine, both on the 2nd. These were cooked or sent away before I heard of them, but as they only weighed 14 lbs. each and as Stubbs said he had never seen any swans like them before I conclude they were Bewick's. Subsequently, Mr. Haigh received a head which proved he was quite right in his opinion. The small swan were all old birds, but there were several grey birds amongst the Whoopers.

BIBLIOGRAPHY:

Papers and Records published with respect to the Natural History and Physical Features of the North of England.

FISHES, 1886, 1887, 1888.

The present instalment includes not only titles for the years stated above, but also those published in the 'Naturalist' in 1884 and 1885.

In this department of the fauna a considerable amount of what is written falls not within the domain of science but of sport, and it is not always easy to eliminate the facts which possess some scientific value from among the purely angling notes. Thus it may be useful here to state that for any desired additional information reference may be made to the columns of the 'Field' and of 'Land and Water.'

It will also be serviceable to note here that the previous ichthyological bibliographies appeared as follows:—For 1884, Naturalist, June 1885, pp. 253-257; and for 1885, Naturalist, Aug. 1886, pp. 242-244.

The Watsonian Vice-Counties are used throughout these bibliographies as more convenient and uniform in area than the unequal political counties; those comprised within our purview are as follows:—Lincoln South, Lincoln North, Notts, Derby, Cheshire, Lancashire South, Lancashire West, Westmorland with Furness, Cumberland, Isle of Man, Cheviotland, Northumberland South, Durham, York N.E., York S.E., York S.W., York Mid West, and York N.W.

ANON. [signed 'Ullswater']. **Cumberland.**

Destruction of the Gwyniad [*Coregonus clupeoides*] **by Lead-mine Water** [in Cumberland: sent as a 'schelly,' and named by Editor as a Gwyniad (*Coregonus pennanti*): the fish has almost disappeared: it must not be confounded (in name) with the 'skelly' of the waters of Cumberland, which is the Common Chub (*Leuciscus cephalus*). Field, June 13th, 1885, p. 784.

ANON. ['Naturalist' reviewer]. **Westmorland.**

[Review of] The Salmonidæ of Westmoreland, Angling Reminiscences, and Leaves from an Angler's Note Book [with notes on *Salmo salar*, *S. fario*, *S. ferox*, *S. willughbii*, *Coregonus clupeoides*, *C. vandesius*, *Osmerus eperlanus*]. **Nat., July 1885, p. 282.**

ANON. [signed 'Cockspur']. **'The Trent.'**

Salmon [*Salmo salar*] **in the Trent** [combatting a statement that this river contained but few]. Land and Water, Feb. 6th, 1886, p. 126.

ANON. [signed 'G.B.']. **York N.E.**

Salmon [*Salmo salar*] **found in the Yorkshire Derwent** [four miles above Malton; 12 lb. weight]. Land and Water, Feb. 6th, 1886, p. 124.

ANON. [signed 'R.B.L.']. **Westmorland.**

Trout [*Salmo fario*] **in condition in February** [in Windermere the large trout netted early in the season are in poor condition, while Irish are usually not]. **Field, Feb. 20th, 1886, p. 229.**

ANON. [not signed]. **Cheshire, Linc., Cumbld., Westmld., Lanc.**

The Irish Pollan [with records of *Coregonus oxyrhynchus* (the hautin) for Lincolnshire ; *C. clupeoides*, the schelley of Windermere, Pemble Mere near Chester ; Ullswater, all the larger lakes of Cumberland and Westmorland. Conningham Mere in Lancashire ; *C. vandesius*, vendace, Derwentwater, and with some doubt in Bassenthwaite Lake]. Field, Feb. 27th, 1886, p. 246.

ANON. [not signed]. **Isle of Man.**

The Butterfly Blenny [(*Blennius ocellaris*) ; 'one has been taken at the Isle of Man']. Land and Water, March 20th, 1886, p. 267.

ANON. [signed 'R.B.L.']. **Cumbld., Westmorland and Furness.**

The Vendace [*Coregonus vandesius*], **Pollan** [*C. clupeoides*], **and Gwyniad** [also *C. clupeoides*] [discussing at length the question as to the occurrence or non-occurrence of these fish in the English Lakes]. Field, Ap. 17th, 1886, p. 494.

ANON. [not signed]. **Yorkshire, Northumberland, Durham, Cumberland, Westmorland, Lincs.**

The Salmon Fisheries of England and Wales [article based upon a recently published blue-book]. Field, May 22nd, 1886, p. 653.

ANON. [signed 'Red Spinner']. **Notts.**

Great Haul of Fish at Clumber [on re-filling the great lake : Pike (*Esox lucius*) were nearly 15,000 in number ; an immense quantity of Carp (*Cyprinus carpio*), perfect shoals of Tench (*Tinca vulgaris*) and Perch (*Perca fluviatilis*), and a prodigious quantity of Eels (*Anguilla vulgaris*), according to a newspaper cutting ; weights are also quoted, the largest Pike being 40 lb., Carp reaching 16 or 18 lb., Perch 10 or 12 lb. (this doubted by writer), and Eels to between 7 and 8 lb.]. Field, June 5th, 1886, p. 733.

ANON. [signed 'Flaneur']. **Cumberland.**

Great Run of Salmon [*Salmo salar*] in the Solway [on the 13th, 14th, and 15th July, 1886]. Field, July 17th, 1886, p. 100.

ANON. [not signed]. **Durham, York N.E.**

The River Tees [statistics, etc., as to the fishing for Salmon (*Salmo salar*) and Trout (*S. fario*)]. Field, Aug. 7th, 1886, p. 216.

ANON. [signed 'R.B.L.']. **Cumberland, Westmorland, Furness.**

The British Char [(*Salmo willughbii*) ; their natural history and distribution in the English Lake District, with some interesting antiquarian records and surmises as to date of supposed introduction]. Field, Nov. 27th, 1886, p. 784.

ANON. [signed 'R.B.L.']. **Cumbld., Westmld., Furness, York N.W.**

The Char [*Salmo willughbii*] **of the Lake District** [detailed notes on distribution, natural history, habits, failure of attempts at introduction, etc.]. Field, Jan. 15th, 1887, pp. 66-67.

ANON. [signed 'A.M., Grimsby']. **'North Sea.'**

Large Soles [(*Solea vulgaris*) a pair weighing 7½ lbs. brought into Grimsby by a North Sea trawler]. Land and Water, March 12th, 1887, p. 240.

ANON. [signed 'Red Spinner']. **Derbyshire.**

The Matlock Bath District [and its angling capabilities ; Trout (*Salmo fario*), Grayling (*Thymallus vulgaris*), Pike (*Esox lucius*), Carp (*Cyprinus carpio*), Chub (*Leuciscus cephalus*), Roach (*L. rutilus*), Dace (*L. vulgaris*), Perch (*Perca fluviatilis*), Tench (*Tinca vulgaris*), and Rudd (*Leuciscus erythrophthalmus*)]. Field, May 21st, 1887, p. 702-3.

ANON. [signed 'D.W.']. **Linc. S.**

Trout [*Salmo fario*] **in the River Welland** [near Market Deeping, one captured weighing close on 2½ lbs. ; the fish very rare in this river]. Field, June 11th, 1887, p. 823.

ANON. [not signed]. **Westmorland.**

Large Brook Trout [(*Salmo fario*) ; one 5 lbs. 2 oz. in Colby Beck near Appleby ; and one 2¼ lbs. in the Eden]. Land and Water, June 11th, 1887, p. 522.

ANON. [signed 'F.S.']. **Isle of Man.**

An Old [Manx] Hallowe'en Custom [with a stolen salt herring and mystic rites]. Manx Note Book, No. 11, July 1887, iii. 146.

ANON. [not signed]. **Isle of Man.**

Notes from a MS. Dated 1801 [that the Herring (*Clupea harengus*) fishery, which is the chief trade, is very considerable, upwards of 800 boats built in the island being employed at it]. Manx Note-Book, No. 11, July 1887, iii. 147].

ANON. [not signed]. **'Trent.**

An Enormous Dace [(*Leuciscus vulgaris*) weighing 1 lb. 2½ oz., taken from a tributary of Trent]. Land and Water, Aug. 27th, 1887, p. 139.

ANON. [not signed]. **York S.W.**

Ackworth Reports.—Natural History Society [Red Trout (*Salmo fario*) and *Esox lucius* in the 'Canal' at Ackworth]. Nat. Hist. Journ., Sep. 15th, 1887, xi. 128.

ANON. [signed 'R.B.L.']. **Westmorland.**

Perch Disease [affecting *Perca fluviatilis* in Killington Reservoir near Sedbergh]. Field, Oct. 8th, 1887, p. 563.

ANON. [not signed]. **'Yorkshire.'**

Large Pike [*Esox lucius*] from Pebley Pond, Yorkshire, weighing 20¼ lbs.]. Land and Water, Oct. 22nd, 1887, p. 340.

ANON. [not signed]. **Northumberland S., Durham.**

List of . . Donations to the Museum . . of the Natural History Society [of Newcastle-on-Tyne], from June 1877 to August, 1887 [1884, a specimen of the Opah ('*Zeus opah*' =?*Lampris luna*), taken at Newbiggin-by-the-Sea, June 20th, 1840, and one of *Sciena aquila*, taken near Blyth, 21st Nov., 1833, being the specimens from which Robt. E. Bewick drew his figure for the proposed work on British Fishes by Thos. Bewick; and the head of a small shark, the Common Tope (*Galeus canis*) taken at Cullercoats (all from John Hancock); a Norway Haddock (*Sebastes norvegicus*), taken off the Tyne, June 1884 (D. Embleton); Three-bearded Rockling, Whistler or Whistle Fish (*Mustela vulgaris* Willoughby = *Motella tricirrata*), caught on the Northumbrian coast (Chas. Henry Young); Angel Shark (*Rhina squatina*) caught off Northumberland coast by steam trawler (purchased); large Burn Trout (*Salmo fario*), killed in the Coquet by Sir W. G. Armstrong; Small Starry Ray (*Raia radiata*), juv., with abnormal mouth, Cullercoats (Thos. Thompson); large Tunny (*Thynnus thynnus* L.), 9 ft. long, caught in the salmon nets, off Frenchman's Bay near South Shields, 24th Aug., 1885 (W. Clift); and three intestinal worms from Sticklebacks (*Gasterosteus aculeatus*) taken at Hebburn]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 9, Part 2 (1888) pp. 276-286.

ANON. [not signed]. **Linc. N. and S., Derbyshire.**

Among the Sheffield Anglers [describing the clubs, and giving notes of their Derbyshire and Lincolnshire haunts, with notes of large pike (*Esox lucius*) Keadby Canal, Dec. 1872; Barbel (*Barbus fluviatilis*), river Idle, many years ago; Bream (*Abramis brama*), river Idle; Chub (*Leuciscus cephalus*), Trout (*Salmo fario*), Abbeydale, May 1880; weights given]. Field, Feb. 18th, 1888, p. 220.

ANON. [not signed]. **York N.W., Derbyshire.**

[Review of] The Book of the Grayling [(*Thymallus vulgaris*): in the Derbyshire and Yorkshire rivers, the average of weight is not high, a 2½lb. being a large fish]. Field, March 31st, 1888, p. 458.

ANON. [signed 'R. B. L.']. **Westmorland and Furness.**

A Large Char [*Salmo willughbii*) caught in Windermere, scaling 2lb. 2oz.; another in Sept. 1887, within an ounce of same weight]. Field, May 12th, 1888, p. 675.

ANON. [signed 'S.S.']. **Cumberland.**

A Garfish [*Belone vulgaris*] taken in the Eden [at Cargo; a large female, 29½ in. long, and a small male, both in sickly condition, at intervals of a few days; dates not given]. Field, June 9th, 1888, p. 819.

ANON. [signed 'Giant']. **'Trent.'**

A fine Bleak [(*Alburnus lucidus*): one from the Trent weighing 3 oz., was recorded in Field, Oct. 24th, 1874, by H. Wild, of Nottingham]. Land and Water, June 16th, 1888, p. 690.

ANON. [signed 'R.B.L.']. **Durham, York N.W.**

In Upper Teesdale [an account of the fishing for Trout (*Salmo fario*)]. Field, Aug. 11th, 1888, p. 214.

ANON. [signed 'R.B.L.']. **Durham.**

Tench [*Tinca vulgaris*] **in the Skerne** [near Haughton, captured in July 1888; plaster cast of it is preserved at Durham]. Field, Aug. 18th, 1888, p. 252.

ANON. [signed 'Tweedside']. **Cheviotland.**

Grayling [*Thymallus vulgaris*] **in the Tweed** [have increased remarkably of late, and are considered injurious to trout; Ed. Field criticises this]. Field, Sep. 15th, 1888, p. 404.

ANON. [signed J. W[ATSON?]]. **Cumberland.**

Capture of an Enormous [55½ lb.] Salmon [(*Salmo salar*) in the Eden at Corby; the nearest approach in weight was a 52 lb. fish caught at Rockcliff]. Land and Water, Nov. 17th, 1888, p. 607.

MATTHEW BAILEY. **York S.E.**

Ballan Wrasse [*Labrus maculatus*] **at Flamborough** [two instances, April 1885]. Nat., June 1885, p. 257.

M. BAILEY. **York S.E.**

Doree [*Zeus faber*] **at Flamborough** [cast up 3rd March, 1886]. Nat., Sep. 1886, p. 278.

A. D. BERRIDGE, Inspector of Fisheries. **Lanc. W., Yorkshire, and 'Trent Valley.'**

Our Salmon Fisheries [Besides information as to *Salmo salar*, reference is made to Lamperns (*Petromyzon fluviatilis*), for which only 5 Fishery Boards report regular fisheries—among the 5 being the Lune, Trent, and Yorkshire Fishery Boards]. 26th Ann. Rep. of the Inspectors of Fisheries (England and Wales) for 1886; reviewed in Field, July 2nd, 1887, pp. 20-21.

A. D. BERRINGTON, Inspector of Fisheries. **Linc. N. and S.**

Fresh-water and Estuary Fisheries [Extracts from and summaries of Mr. Berrington's report, in which he deals with the Welland fisheries for Eels (*Anguilla vulgaris*), the Lower Trent and the nets used there, and the Salmon fishery laws]. Field, Dec. 10th, 1887, p. 883.

A. D. BERRINGTON, Inspector of Fisheries. **Linc. N. and S.**

Fishing [for Eels] in the Witham District [being extract from Mr. Berrington's report on an inquiry held by him on the laws which hinder free fishing for eels (*Anguilla vulgaris*) in the Witham]. Field, Dec. 10th, 1887, p. 884.

JOHN BRUNTON. **Derbyshire.**

On the Introduction and Acclimatisation of Grayling [*Thymallus vulgaris*] in Trout Streams [in which the Derbyshire Derwent, and Hampshire Itchen are contrasted with each other at length as grayling streams]. Land and Water, March 20th, 1886, pp. 265-266.

THOMAS BUNKER. **York S.W. and S.E.**

Angler-fish [*Lophius piscatorius*] **at Whitgift** [caught 27th May, 1884]. Nat., Oct. 1884, p. 60.

THOMAS BUNKER. **York S.E. and S.W.**

Goole Fish-notes [anent *Salmo salar*, *Acipenser sturio*, *Lophius piscatorius*, and *Clupea alosa*]. Nat., March 1886, p. 81.

THOMAS BUNKER. **York S.E. and S.W.**

Fishes observed near Goole [*Lophius piscatorius* in the salmon nets; *Trachinus vipera*, three miles below Goole, Aug. 1886; a *Syngnathus* at Howden Dyke; a *Salmo salar* scaling 35 lbs.; and some *Acipenser sturio* taken]. Nat., Oct. 1886, p. 309.

HERBERT C. CHADWICK. **Lanc. S.**

On [Sticklebacks (*Gasterosteus aculeatus*) **infested by] Gyrodactylus elegans** [in a pond at Eccles near Manchester]. Ann. Rep. Manch. Micro. Soc. for 1883-4 (pub. 1884), p. 7.

WM. EAGLE CLARKE. **Linc. N.**

Snake Pipe Fish [*Nerophis ophidion*] on the Lincolnshire coast [at Skegness, Sept. 1886]. Nat., Oct. 1886, p. 309.

W. EAGLE CLARKE. **York N.E.**

The 'Pinky' or 'Scaley' of the Yorkshire Esk [which is determined by Dr. Day from specimens as young Salmon Trout (*Salmo trutta*); notes on its occurrence by Mr. T. Stephenson are given]. Nat., Sep. 1888, p. 274.

T. D. A. COCKERELL. **Cheviotland.**

North of England Specimens in the British Collection at the British Museum [including *Salmo salar*, Tweed; *Myliobatis aquila* and *Brama raii*, Berwick; and hybrid *Salmo*; details given]. Nat., Aug. 1888, p. 227.

JOHN CORDEAUX. **York S.E., Linc. N.**

The Spurn [and its waters as a locality for fish; *Raja batis*, *Trachinus vipera*, *Cottus scorpius*, *Agonus cataphractus*, *Zoarces viviparus*, *Mugil septentrionalis*, *Gadus morrhua*, *G. virens*, *Rhombus maximus*, *Pleuronectes platessa*, *P. flesus*, *Solea vulgaris*, *Salmo salar*, *S. trutta*, *Syngnathus acus*, *Nerophis ophidion*, *Lampris luna*, *Torpedo hebetans*, and *Capros aper* noted as having occurred]. Nat., Aug. 1884, pp. 1-8.

JOHN CORDEAUX. **Linc. N. and S., York S.E.**

Lincolnshire [and its fishes; *Esox lucius*, *Anguilla acutirostris* (off Flamborough Head), both in great size, *Salmo salar*, *Lota vulgaris*, *Barbus*, and *Leuciscus rutilus* in plenty, noted]. Nat., Jan. 1886, pp. 12-13.

JOHN CORDEAUX. **York S.E., Linc. N.**

Three-bearded Rockling [*Motella tricirrata*] **in the North Sea** [taken in a trawl-net between Flamborough and the Dogger; description given]. Nat., Jan. 1888, p. 24.

R. D. DARBISHIRE. **Linc. N.**

Note on the Fishes of Grimsby about 1300 [Extract from the 'Lay of Havelok the Dane'; references to Sturgeon (*Acipenser sturio*), Turbot (*Rhombus maximus*), Salmon (*Salmo salar*), Cod (*Gadus morrhua*), Herring (*Clupea harengus*), Mackerel (*Scomber scomber*), Halibut (*Hippoglossus vulgaris*), Sole (*Solea vulgaris*), Lamprey (*Petromyzon marimus*), Plaice (*Pleuronectes platessa*), and Eels (*Anguilla vulgaris*)]. Nat., Oct. 1884, p. 61; repeated in Angler's Note Book, Yellow Series, 1888, p. 91.

R. D. DARBISHIRE. **Lanc. W.**

[Leptocephalus morrisii found at Lancaster, amongst a number of fishes placed on a field for manure]. Proc. Manch. Lit. and Phil. Soc., Nov. 8th, 1886, xxvi. 53..

F. DAY. **Cumberland.**

[Vendace (*Coregonus vandesius*) **in Derwentwater and Bassenthwaite Lakes;** Gwiniad (*C. coregonoides*) and its restriction to the Eden basin; diseased intestine of a Sea-Trout from the (which?) Esk; details given; all exhibited to Zool. Soc.] Proc. Zool. Soc., May 19th, 1885, p. 483; and Nat., March 1886, p. 81.

Notts., Derbysh., Lanc. S. and W., York Mid. W., Cumbld., Cheviotld.

FRANCIS DAY.

Migration of the Salmonidæ. Part I. Notes on 'Early' and 'Late' Rivers [discussing—among others—the Trent, Ribble, Solway, Tweed, Eden, Esk, Caldew, Peteril, etc.]. Nat., Jan. 1886, pp. 19-29.

Cheviotland, Northumberland, Durham, Cheshire.

FRANCIS DAY.

Migration of the Salmonidæ. Part II. Periods of Migration [discussed at length, with the aid of evidence derived from the Tyne, Holy Island, the Coquet, Shields, the Dee at Chester, and other places]. Nat., April 1886, pp. 115-128.

Westmorland, Cumberland.

FRANCIS DAY.

On the Loch-Leven Trout (*Salmo levenensis*) [with reference (at p. 75) to the form from Ullswater and Windermere which Parnell called *Salmo cæcifer*]. Journ. of Linn. Soc., Zoology, No. 117 (June 30th, 1887), vol. xx, pp. 71-90.

York S.E., N.E. and Mid W., Lanc. S.

FRANCIS DAY.

Fish and Fisheries Review [an Opah (*Lampris luna*) 4½ ft. long, taken on the Yorkshire coast the last week in Aug. 1887; Trout (*Salmo fario*) introduced into Manchester reservoirs to clean off spawn of *Limnæa*; breeding Trout to be discontinued in the Otley reservoirs; *Læmargus borealis* (Greenland Shark) captured fifty miles from Whitby, Aug. 26th, 1887]. Field, Jan. 7th, 1888, pp. 24-25.

Cumberland.

FRANCIS DAY.

Sea Trout [*Salmo trutta*] **from Cumberland Derwent** [described]. Field, April 21st, 1888, p. 555.

Cumberland.

W. DUCKWORTH.

Lump Fish [*Cyclopterus lumpus*] **in the Solway** [at Skinburness, March 20th and April 3rd, 1886, and others at Burgh Marsh on April 23rd; particulars given]. Trans. Cumb. and Westm. Assoc., No. xi. 1885-86 (pub. 1886), p. 149.

Cumberland.

W. DUCKWORTH.

Sturgeon [*Acipenser sturio*] **in Eden** [netted April 17th, 1886, at the Cargo fishery; weighed between nine and ten stone]. Trans. Cumb. and Westm. Assoc., No. xi. 1885-86 (pub. 1886), p. 150.

Isle of Man.

ED[itor of Zoologist].

Habits of the Holibut [(*Hippoglossus vulgaris*); one sent to Edinburgh from the Isle of Man weighed 320 lbs., and measured 7 ft. 6 in. by 3 ft. 6 in.]. Zool., Jan. 1886, x. 28.

York Mid W. and S.E.

ED[itor]s., N. H. J.

[**Sturgeon** (*Acipenser sturio*), **very large,** caught in the Ouse, near Selby, June 26th, 1886]. N.H.J., Nov. 15th, 1886, x. 168.

York N.E.

ED[itor of Zoologist].

Ray's Bream [*Brama raii*] on Scilly [a note by T. Cornish, to which Editor repeats Ray's record for Middlesburgh Marsh, Sep. 1681]. Zool., Oct. 1887, xi. 393.

Linc. N.

EDWD. ELMHIRST.

Voracity of Pike [(*Esox lucius*) of 14 lb. swallowing an 8 lb. Carp, Riseholme Lake, near Lincoln, sixty years ago]. Field, Feb. 18th, 1888, p. 221.

Northumberland S. or Durham.

D. EMBLETON.

Note on the Capture of [a small Shoal of] Tunnies [*Thynnus thynnus*] and of a fine specimen of the "Bergylt," or Norwegian Haddock [*Sebastes norvegicus*] off the Tyne, June, 1884 [measurements given]. Nat. Hist. Trans. Northumberland Durham and Newcastle, vol. 8, Part 2, 1886, p. 221.

Durham, Westmorland, York N.W.

D. EMBLETON.

A Catalogue of the Place-names in Teesdale [including some derived from fish; see p. 11 (Trout—*Salmo fario*)]. Nat. Hist. Trans. of Northumberland Durham and Newcastle, vol. ix, Part 1 (1887) pp. i-xviii and 1-223.

F. J. FARADAY. **York Mid W.**

Notice of a Fish-breeding house erected by the Manchester Anglers' Association at Horton-in-Ribblesdale, Yorkshire [giving full particulars and plan of the house, and referring to the breed of Trout (*Salmo fario*) found in the Ribble]. Proc. Manch. Lit. and Phil. Soc., Feb. 8th, 1887, xxvi. 85-94 and plate.

JAMES FLEMING. **Cheshire.**

Rambles during the Year 1887.—Bramhall [2nd July; *Gasterosteus aculeatus*, male, noted in pond at Mile End]. Ann. Rep. Manch. Microsc. Soc. for 1887 (pub. 1888), p. 65.

T. W. FOWLES. **Cheshire.**

Length [44 inches] and Weight [22 lb.] of Pike [(*Esox lucius*) caught presumably at Nantwich]. Field, July 31st, 1886, p. 178.

LEONARD GAUNT. **York S.W.**

The Yorkshire Naturalists' Union at Askern [20th May, 1886; *Esox lucius* and *Anguilla* noted]. Nat., June 1886, p. 189.

HUGH S. GILL. **Isle of Man.**

Notes from the Registers [of] the Parish of Malew [in the Isle of Man; 'Note: that att ffleshwicke on Sathurday the 13th of July 1667 Richd Read cu sociis had their boat almost Loaden with herrings [*Clupea harengus*], and on Tusday after, the most were loaden, all had sufficient, and soe continued with such an aboundance, that they brought theire boats full to Duglas, Castletown, and Peele, and sould for 12d 10d and some for 9d, and 6d ₱ Maze, and very fatt fish'—to which it is noted that Manxmen will not need to be told that a *mease* of herrings is five hundred, i.e. 5 × 124 = 620 fish]. Manx Note-Book, No. 8, Oct. 1886, vol. 2, p. 185.

JAMES HARDY. **Northumberland.**

Report of Meetings of Berwickshire Naturalists' Club, for the year 1885 . . . Rothbury [24th June; mention made of Salmon-leistering on the Coquet as formerly practised, and that Eel-spearing still forms an exciting sport at the Thrum]. Proc. Berw. Nat. Club for 1885 (pub. 1886), xi. 38-39.

H. S. HARLAND. **York N.E. or N.W.**

Trout [*Salmo fario*] **in Long Captivity** [in a wrought-iron tank, North Riding of Yorkshire, 20 ft. above ground: tank supplied from neighbouring trout-stream by small pipe and force-pump]. Land and Water, March 24th, 1888, p. 323.

H. S. H[ARLAND]. **York S.E.**

Large Trout [(*Salmo fario*) **preserved in Scarborough Museum,** captured about forty years ago in the Driffield Trout-stream; weighed 12½ lbs.] Land and Water, Aug. 25th, 1888, p. 223.

G. E. HASTINGS. **Northumb. S.**

Some Summer Notes on Fish [as observed at Tynemouth and Cullercoats; *Salmo salar*, Salmon-trout (*S. fario* [sic]), Codlings, Cod (*Morrhua vulgaris*), Haddock (*M. aglefinus*), Whiting (*Merlangus vulgaris*), Sand-eels (*Ammodytes lancea*), Red Gurnard (*Trigla pini*), Grey Gurnard (*T. gurnardus*), Herring (*Clupea harengus*), Thornback (*Raja clavata*), Angler (*Lophius piscatorius*), Lucky Proach (*Cottus bubalis*), Fifteen-spined Stickleback (*Gasterosteus spinachia*), Shanny (*Blennius pholis*), Butterfish (*B. gunnellus*), etc., cited, with local names]. Nat. Hist. Journ., March 15th, 1888, xii. 47-48.

G. E. HASTINGS. **Northumberland S.**

Some Winter Notes on Fish, Starfishes, etc. [at Tynemouth and Cullercoats; *Gobius auratus*, *G. ruthensparri*, *Cottus bubalis*, *Liparis montagui*, *Zoarces viviparus*. *Anarhichas lupus*, *Callionymus lyra*, *C. dracunculus*, *Raniceps trifurcatus*, *Zeus faber*, *Gadus luscus*, and *G. aglefinus* mentioned with interesting notes]. Nat. Hist. J., May 15th, 1888, xii. 91.

G. E. HASTINGS. **Northumberland S.**

York, Bootham. Natural History Club [*Gasterosteus aculeatus* (3-spined Stickleback) in a sea-pool at Tynemouth, with Green Crabs and Devil fishes; also *Gobius ruthensparri*, *Blennius pholis*, and *Ammodytes lanceolatus*]. Nat. Hist. Journ., Oct. 15th, 1888, xii. 160.

G. E. HASTINGS. **York S.W.**

Roach [*Leuciscus rutilus*] **and Trout** [*Salmo fario*] in the 'Canal,' Ackworth, [the latter the first on record for the vicinity]. Nat. Hist. Journ., Nov. 1st, 1888, xii. 184.

G. E. HASTINGS. **York S.W.**

The Three-spined Stickleback [(*Gasterosteus aculeatus*), its habits and nidification as observed at Ackworth]. Nat. Hist. Journ., Nov. 1st, 1888, xii. 185.

G. E. HASTINGS. **York S.W.**

Ackworth Fishes [are 8 in number, viz., Roach (*Leuciscus rutilus*), Dace (*L. vulgaris*), Perch (*Perca fluviatilis*), Pike (*Esox lucius*), Trout (*Salmo fario*), Sharp-nosed Eel (*Anguilla acutirostris*), Three-spined Stickleback (*Gasterosteus aculeatus*), and Stone Loach (*Cobitis barbatula*); localities and relative abundance stated for each]. Nat. Hist. Journ., Nov. 1st, 1888, xii. 185.

G. E. HASTINGS. **York N.W., N.E. and Mid W.**

York Fishes [16 enumerated, with localities and relative abundance, viz., Roach (*Leuciscus rutilus*), Dace (*L. vulgaris*), Tench (*Tinca vulgaris*), Gudgeon (*Gobio fluviatilis*), Chub (*L. cephalus*), Minnow (*L. phoxinus*), Grayling (*Thymallus vulgaris*), Trout (*Salmo fario*), Salmon (*S. salar*), Pike (*Esox lucius*), Perch (*Perca fluviatilis*), Ruff (*Acerina cernua*), Three-spined Stickleback (*Gasterosteus aculeatus*), Ten-spined Stickleback (*G. pungitius*), Sharp-nosed Eel (*Anguilla acutirostris*), and Stone Loach (*Cobitis barbatula*)]. Nat. Hist. Journ., Nov. 1st, 1888, xii. 185-186.

J. HEART. **York Mid W.**

Grayling [*Thymallus vulgaris*] **in Trout-streams** [the Wharfe is becoming more a Grayling than a Trout stream, 'unless something be speedily done']. Field, Oct. 13th, 1888, p. 537.

J. A. HEASTIE. **York S.W.**

Growth of Trout [(*Salmo fario*) **at Thongsbridge** near Huddersfield, in a reservoir]. Land and Water, Dec. 1st, 1888, p. 682.

T. C. HEYSHAM. **Cumberland.**

[Cobitis barbatula (Bearded Loach) **and** *Osmerus eperlanus* (Sparling) fed on near Carlisle by the Greenshank (*Totanus canescens*), Aug. 15th and 25th, 1832]. Macpherson and Duckworth's 'Birds of Cumberland,' 1886, p. 160.

RICHARD HOWSE. **Northumberland S., Durham.**

Note on the Visit of a Shoal of Tunny [*Thynnus thynnus*] to the Northumberland Coast in June, 1884 [full and detailed particulars]. Nat. Hist. Trans. Northumb. Durh. and Newc., Vol. 8, Part 2. 1886, pp. 221-222.

RICHARD HOWSE. **Durham.**

Note on the Capture of a very large Tunny [*Thynnus thynnus*] in the Salmon Nets, off Frenchman's Bay, near the mouth of the Tyne, in August, 1885 [measurements and description given]. Nat. Hist. Trans. Northumb. Durh. and Newc., Vol. 8, Part 2, 1886, pp. 223-224.

PETER INCHBALD. **York S.E.**

Fishes of Hornsea Mere [are Pike (*Esox lucius*), Perch (*Perca fluviatilis*), Roach (*Leuciscus rutilus*), Eels (*Anguilla vulgaris*), and Ruff (*Acerina cernua*)]. Field, Nov. 19th, 1887, p. 780.

J. ISMAY. **York S.W.**

Some Account of the Parish of Mirfield (by Mr. Ismay), to a Friend in Cumberland. 1755 [the river produces Salmon (*Salmo salar*), Trout (*S. fario*), Smelts (*S. salar*, juv.), Graylings (*Thymallus vulgaris*), Daice (*Leuciscus vulgaris*), Perch (*Perca fluviatilis*), Eels (*Anguilla vulgaris*), Chubs (*Leuciscus cephalus*), Barbles (*Barbus fluviatilis*), and Gudgeons (*Gobio fluviatilis*)]. Yorksh. Notes and Queries, Part 10, Jan. 1888, p. 206.

J. E. LITTLEBOY. **Derbyshire.**

Grayling [*Thymallus vulgaris*] **in the Colne and Gade** [introduced into the latter from the Derbyshire Dove]. Trans. Herts. Nat. Hist. Soc., Vol. iii. Part 8 (Feb. 1886), p. li. of Proceedings.

R. LOFTHOUSE. **Durham, York N.E.**

The River Tees: its Marshes and their Fauna [*Salmo salar* and *Acipenser sturio* noted]. Nat., Jan. 1887, pp. 1-16.

E. MITFORD. **York S.E.**

Stone Swallowed by a Trout [(*Salmo fario*), in an East Riding stream: a ¾-1 lb. trout had swallowed a smooth stone weighing ¾ oz. and measuring 1 × 1 × ¾ inches]. Field, Aug. 28th, 1886, p. 326.

T. H. NELSON. **York N.E.**

Occurrence of the Sting-Ray [*Trygon pastinaca*] at Redcar [Sep. 5th, 1885]. Nat., Aug. 1886, p. 252.

GEORGE L. PAULIN. **Cheviotland.**

Statistics and Notes as to River Tweed Salmon Fishings [Tables given of estimated annual produce of River Tweed; average weight of Salmon (*Salmo salar*), Grilse and Trout (*Salmo fario*); sexes of Salmon and Grilse; weight of large salmon taken by nets: and of Tweed salmon taken by rod and line; etc.]. Proc. Berw. Nat. Club for 1886 [pub. 1887] xi. 534-537.

JOHN H. PHILLIPS. **York N.E.**

Grey Mullet near Scarborough [one caught near Hayburn Wyke, 30th Aug. 1886; species not determined; an editorial note treats of the species of *Mugil* already recorded for the Yorkshire coast]. Nat., Oct. 1886, p. 309.

T. E. PRITT. **York Mid W.**

The Close Season for Trout [(*Salmo fario*); the character of Trout Yorkshire streams discussed]. Field, March 20th, 1886, p. 385.

BENJAMIN J. RIDGE. **York N.E. and S.E., Linc. N.**

Trawling [with a notice of the rise of Grimsby as a fishing-port; and of the celebrated 'Silver Pits' in the North Sea, as yielding enormous quantities of Soles (*Solea vulgaris*)]. Journ. of Plymouth Inst., vol. 9, part 3 (1886-87), pp. 375-387.

GEORGE ROBERTS. **York S.E.**

Mollusca [and some Fish] of Wressle and Neighbourhood [the Flounders (*Pleuronectes flesus*), and some other flat-fish, come up with the tide]. Nat., Oct. 1886, p. 311.

JOHN E. ROBSON. **Durham.**

The King Fish [*Lampris guttatus*] **at Hartlepool** [found on Black Hall Rocks, four miles N., Oct. 30th, 1886: details and measurements given]. Young Nat., Nov. 1886, vii. 236.

JOHN E. ROBSON. **Durham.**

Sturgeon [*Acipenser sturio*] **at Hartlepool** [29th Feb.; length, 7 ft. 4 in., and weight over 8 stone]. Young Nat., April 1888, ix. 83.

JOHN E. ROBSON. **Durham.**

The Sturgeon [*Acipenser sturio*] **at Hartlepool** [third specimen within a twelvemonth; a fine example, 6 ft. long, brought in 1st June, by a trawler]. Young Nat., July 1888, ix. 143.

P. L. SIMMONDS. **Westmorland, Lancashire, Northumberland.**

The Animal Food Resources of Different Nations, with mention of some of the Special Dainties of Various People derived from the Animal Kingdom [Dogfish caught in Morecambe Bay are sent—under name of 'Darwen Salmon'—to Preston and Blackburn for sale, where they are much liked, and fetch as high a price as Skate (p. 317); Salmon (*Salmo salar*) of Tweed referred to at p. 322, the farm-servant's veto being mentioned; statistics of the takes of Tyne Salmon given at p. 324]. . . . London: E. & F. N. Spon, . . . 1885 [8vo, cloth, 461 pages].

CARL SIMONSEN. **Isle of Man.**

Sildefisket ved Öen Man [a detailed account of the Manx fishery for Herrings (*Clupea harengus*)]. Fiskeritidende (Kjobenhavn), Sept. 1st, 1885; translation by H. Jacobson in Bull. U.S. Fish Commission, vi. 1886 (pub. 1887), pp. 152-155.

E. H. SMART. **York S.E. and N.E., Durham.**

Occurrences of Banks' Oar-fish [*Regalecus banksii*], **the Sun-fish** [*Orthagoriscus mola*], **and the Opah** [*Lampris luna*] on the Yorkshire and Durham Coasts [Oar-fish at Flamborough, Feb. 1884; detailed account of the occurrence; former occurrences recapitulated; Sun-fish at Scarborough and Runswick; Opah at Hartlepool and Flamborough]. Nat., Aug. 1887, 227-8.

THOMAS STEPHENSON. **York N.E.**

Whitby Notes [for Oct., Nov. and Dec. 1884: *Gasterosteus spinachia*, *Rhombus punctatus*, *Gadus aglefinus*, and *Labrax lupus* noted]. Nat., March 1885, p. 180.

THOS. STEPHENSON. **York N.E.**

Basse [*Labrax lupus*] **in Whitby Harbour** [12th May, 1885; first occurrence in the harbour]. Nat., July 1885, p. 269.

THOS. STEVENSON [misprint for Stephenson]. **York N.E.**

Muller's Topknot [*Rhombus punctatus*] **at Whitby** [one captured, 13th May, 1881]. Nat., July 1885, p. 269.

THOS. STEPHENSON. **York N.E.**

Whitby Fish-notes [Grey Mullets (*Mugil* species)]. Nat., March 1886, p. 81.

THOMAS STEPHENSON. **York N.E.**

Whitby Fish-notes [anent a Codfish (*Gadus morrhua*) with both smear and roe, and *Salmo trutta*]. Nat., Sep. 1886, p. 278.

THOS. STEPHENSON. **York N.E.**

Whitby Fish-notes [records of *Mugil capito?*, *Capros aper*, *Lumargus borealis*, *Galeus canis*, *Raja circularis*, *Pagellus centrodontus*, and *Echinorhinus spinosus*, taken from Aug. to Nov. 1886]. Nat., Feb. 1887, p. 38.

THOS. STEPHENSON. **York N.E.**

Whitby Fish-notes [in respect of *Labrus maculatus* and *Orthagoriscus mola*, captured respectively in Nov. 1886 and Sep. 1887]. Nat., Oct. 1887, p. 299.

THOMAS STEPHENSON and FRANCIS DAY. **York N.E.**

Occurrence of Pagellus acarne at Whitby [on Jan. 23rd, 1887; F. Day's note states synonymy and distribution, T. Stephenson notes details of occurrence]. Nat., Nov. 1887, p. 352.

THOMAS STEPHENSON. **York N.E.**

Fish-notes from Whitby [on the occurrence of *Trachinus draco* (five, Aug. 25th, 1887, etc.), *Galeus canis*, *Mugil chelo* (one Aug. 24th), *Lumargus borealis* (one, Aug.), and *Orthagoriscus mola* (one, Sep. 22nd, 1887)]. Nat., Dec. 1887, p. 354.

J. A. ERSKINE-STUART. **Cheviotland.**

The Bull Trout (*Salmo eriox*) **[in the Tweed;** its habits stated, and claim to specific rank upheld]. Nat., Oct. 1885, pp. 345-347.

J. A. Erskine Stuart. **Cheviotland, Northumberland, Durham.**
British Freshwater Fishes, No. II. [deals with the Salmon (*Salmo salar*); for which Tweed and Tyne are quoted as two of the chief rivers]. Nat. World, March 1886, iii. 50-53.]

J. A. Erskine Stuart. **Northumberland, Cumberland.**
British Freshwater Fishes, No. III. The Sea Trout (*Salmo trutta*) and the Bull Trout (*Salmo eriox*) [notes on those found in Tweed, Coquet, and Solway rivers]. Nat. World, April 1886, iii. 72-73.

J. A. Erskine Stuart. **Drbyshre, Northmbld, Cumbld, York, Westmld.**
British Freshwater Fishes, No. IV. The Trout (*Salmo fario*) [in Derbyshire, Coquet, Tyne, Eden, Wharfe, and Yore, and Great Lake Trout in Windermere]. Nat. World, May 1886, iii. 91-93.

J. A. Erskine Stuart. **Derbysh., Notts., York Mid W. and N.W.**
British Freshwater Fishes, No. V. The Grayling (*Thymallus vulgaris*) [the best Grayling rivers are the Derbyshire Dove, Trent, Wharfe and Yore]. Nat. World, June 1886, iii. 106-109.

J. A. Erskine Stuart. **Linc., Notts.**
British Freshwater Fishes, No. VI. The Pike (*Esox lucius*) [the sluggish rivers of Lincolnshire and Notts. noted for their pike-fishing]. Nat. World, Sep. 1886, iii. 164-166.

Geo. Swainson. **Isle of Man.**
On the Dalby Rocks [Isle of Man; list of captures in Aug. 1888; *Lepadogaster bimaculatus* enumerated]. Wesl. Nat., Nov. 1888. ii. 268.

W. B. Tegetmeier. **York S.E.**
Striped Wrasse [*Labrus mixtus*] **off Folkestone** [and mentioned also as having occurred at Flamborough]. Field, Jan. 30th, 1886, p. 132.

M. G. Watkins. **York N.E., Cheviotland, Northumberland.**
Salmo eriox: the Bull-Trout [quotations and discussion, and an appeal for a good account of the species; local names quoted]. Nat., Oct. 1884, pp. 59-60.

M. G. Watkins. **Linc. N.**
Grayling [*Thymallus vulgaris*] **and Grayling Fishing** [a gossiping article; refers to the Claythorpe Beck being now famous for grayling, the fish having been introduced some fifty years ago]. Land and Water, Feb. 27th, 1886, pp. 194-195.

Thomas Winder. **York S.W.**
Abnormal [i.e. double-headed] Trout [*Salmo fario*] in a reservoir near Sheffield]. Sci. Goss., Jan. 1886, p. 19 and woodcut.

J. H. Wrigley, Jun. **Lanc. S.**
Lump-sucker [*Cyclopterus lumpus*] **and Green Wrasse** [*Labrus donovani*] **on the Lancashire Coast** [at Formby, taken in the nets, Ap. 27th, 1887; weight given]. Field, May 7th, 1887. p. 622.

NOTE—BOTANY.

Acorus calamus in South Yorkshire.—This plant is abundant in the Dearne and Dove Canal, forming dense clumps at intervals between Swinton and Barnsley, as well as in other parts of the canal. It is most luxuriant on the side opposite to the tow-path where it escapes the fretting action of the tow-line. Many flowers of it were to be seen in July of this year.—J. H. Payne, Newhill, Rotherham, 26th December, 1890.

PINE GROSBEAK IN NOTTS.

F. B. WHITLOCK,

Beeston, Notts.

A FINE male specimen of this bird (*Pinicola enucleator*) was killed on 30th October last, near Watnall, by Dr. Dixon of Eastwood. The bird, when first observed, was drinking at a small pond. On being disturbed it flew into an adjacent tree, when the doctor shot it. This is the first Nottinghamshire occurrence of this species, and Mr. Whitaker, of Rainworth, informs me only the sixth authenticated specimen for Great Britain. As I was the first to identify the bird at the taxidermist's shop, I append a short description of it. Beak, shaped very much like that of the bullfinch; the upper mandible dark-brown, the lower one much lighter except at the tip. Crown, vermilion lake, with a few grey tips to the feathers; lores, grey. Nape, alternate longitudinal stripes of grey and lake. The feathers of the upper parts grey and lake in about equal proportions. Upper tail coverts, grey, tinged with lake. Tail, dark grey, tinged with red on the outer edges of most of the feathers. Chin, grey; throat, cheeks, and breast, crimson lake but paler than the crown. Abdomen and under tail coverts, grey. The whole of the wing dark-grey, broadly edged with white on the wing-coverts. Legs and feet, dark-brown. Irides, dark hazel.

NOTE—GEOLOGY.

The Basement Conglomerate of the Carboniferous in Westmorland and Yorkshire.—In a note in the July number (p. 202) I pointed out that the pebbles in this conglomerate, as seen at Ullswater, consist mostly of a grit resembling the Coniston Grit, with a smaller proportion of rocks referred to the Ordovicians of the Lake district. A collection of pebbles from just west of Sparker Mill, Hutton, preserved in the Keswick Museum, consists, on the other hand, chiefly of volcanic and other igneous rocks, all probably from the Lake district, together with fossiliferous Coniston Limestone. The latter has a highly crystalline character, which is only locally developed in the main outcrop in Westmorland and North Lancashire, but is well seen at Keisley near Appleby. Hutton is only about two miles from Dunmallet, the locality noticed before.

In Hebblethwaite Gill, near Sedbergh, where a very considerable thickness of the conglomerate is present, there are plenty of pebbles of red-stained Coniston Limestone with *Orthis testudinaria*, etc., some rather crystalline in texture and apparently dolomitised or charged with carbonate of iron. At this locality, however, most of the pebbles are of a red-and-green-spotted greyish grit, sometimes including cubes of pyrites converted into limonite, and strongly recalling the Ingleton grit. A few other rocks occur, e.g., a felsite with felspars replaced by dark pseudomorphs, resembling some of those intrusive in the Ordovicians.

In some places the materials of the conglomerate seem to be strictly local, as in the beck immediately west of Shap Wells Hotel, where the rock is made up almost entirely of débris of Shap Fell granite, of which partially decomposed but easily recognised fragments are seen imbedded in a matrix apparently of similar origin.—ALFRED HARKER, Cambridge, October 17th, 1890.

NOTES ON THE REV. W. FOWLER'S LIST OF LINCOLNSHIRE LIMESTONE PLANTS

(See 'Naturalist,' June 1890, p. 169).

J. BURTT DAVY,
Hon. Sec. Alford Naturalists' Society, Alford, Lincs.

As some of the plants for which stations are given in Mr. Fowler's list have also been found in the Alford district of North Lincolnshire, a few notes upon them may not be out of place at this time, nor devoid of interest to those readers of 'The Naturalist' who may be engaged in investigating the Flora of the county. To these are appended a few notes on some of the plants included in Mr. Fowler's five other Lincolnshire lists, together with one or two records from outside the Alford district.

The records in these notes which have the mark ! affixed, have been verified as to specific determination by Mr. F. Arnold Lees.

Dipsacus pilosus Linn. Marshy holt near the stream, Aby, 6th August, 1890 ! (J. W. Chandler).

Erigeron acre Linn. The first record in our Botanical Register is 'Major Higgins' garden wall, Alford, 24th July, 1885 (J. W. Chandler),' incorrectly inserted as *E. canadensis* Linn.; same place, 14th August, 1890 ! (J.B.D.). Mablethorpe sand-hills, 4th August, 1890 ! (J. W. Chandler).

Cnicus eriophorus Hoffm. Claxby near Alford, 13th September, 1890 ! (J.B.D.).

Cnicus acaulis Hoffm. Well, 17th August, 1889 ! (J.B.D.).

Cnicus acaulis var. **caulescens.** South Ormesby, 6th August, 1888 ! (J.B.D.), see 'Naturalist,' October 1888, p. 284. Mablethorpe sand-hills, 4th August, 1890 ! (F. Altoft). Well Vale, 3rd September, 1890 (J.B.D.).

Salvia Verbenaca Linn. Dry bank, Calceby, 17th August, 1888 (J.B.D.).

Polystichum angulare Presl. Claxby near Alford, in a plantation of young Larch, 20th September, 1890 ! (J.B.D.).

Between the chalk wolds and the marsh there is a glacial deposit of brown and purple boulder clay overlying the Chalk rock to a depth of from 70 to 80 feet. Upon this boulder clay the following Limestone plants have been found :—

Linaria Elatine Mill. Greenfield, 23rd August, 1890 (J.B.D.).

Neottia Nidus-avis Rich. Tothill, September 1887 (Miss Susan Allett, identified by Mr. J. Eardley Mason).

Epipactis media Fries. Aby, 4th August, 1890! (J. W. Chandler); this appears to be the first record of its occurrence in Lincolnshire.

Ophrys apifera Huds. has grown for some years in one place in the parish of Ailby; our first record is 'Ailby, 3rd July, 1886 (J. W. Chandler).' Specimens were brought to me from this station on the 30th of June and 7th of July this year.

Habenaria viridis R.Br. Tothill, 29th June, 1888! (Miss Susan Allett). Ailby, 8th June, 1890! (J.B.D.).

Habenaria chlorantha Bab. is plentiful at Well Vale on the Chalk, and at Ailby on the Boulder Clay; our first record is for Ailby, 3rd July, 1886 (J. W. Chandler).

Paris quadrifolia Linn. Aby, 9th May, 1890 (J.B.D.).

Polystichum angulare Presl. Withern, 1887! (Miss Susan Allett). Recorded in 'The Naturalist,' April 1888, p. 102, as being new to North Lincolnshire.

The following records of Limestone plants do not relate to the Alford district.

Spiræa Filipendula Linn. and **Cnicus acaulis** Hoffm. were pointed out to me by an Irish botanist (Mr. Thomas Chandlee of Ballytore, Co. Kildare), on the Ermine Street between Fulbeck Heath and Ancaster (South Lincolnshire), in July 1884.

Salvia Verbenaca Linn. growing out of a wall at Bracebridge, Lincoln, 21st July, 1890 (J.B.D.)

Daphne Laureola Linn., several specimens, and

Habenaria chlorantha Bab., plentiful, in a small wood at Gunby St. Peter, on the Boulder Clay, 18th June, 1890 (J.B.D.).

Asplenium Ruta-muraria Linn. Church-yard wall, Burgh-le-Marsh, several tufts 19th September, 1889 (J.B.D.).

[**Clematis Vitalba** Linn. and **Ruscus aculeatus** Linn.] are found in a small plantation known as Fanthorpe Lawn, about two miles from Louth. The latter—of which the female flowers are probably abortive, as I am told that, though flowering annually, it *never* bears berries—grows in a patch about four feet square, under the shade of a stately yew. An old labourer told me that formerly the carriage-drive to Fanthorpe Hall passed close beside, if not through, the plantation, and the *Clematis* and *Ruscus* may have been planted, together with

Aconitum Napellus and *Philadelphus coronarius*, specimens of which still grow there. The plantation also contains a row of Scotch Firs.

A small piece of *Clematis Vitalba* grows in a road-side hedge opposite Thorpe Hall, in the parish of South Elkington, but I fear it is too near to the Hall gardens to be considered truly wild.

Of the plants noted in Mr. Fowler's five other lists, I can give additional stations for the following:—

Papaver Argemone Linn. Rigsby chalk-pit, 28th August, 1889 (J.B.D.).

Arenaria peploides Linn. and **Lepigonum salinum** Kindb. Ingoldmells Point, 9th August, 1890! (J.B.D.).

Althæa officinalis Linn. Freiston shore, 24th August, 1890 (F. Larder).

Geranium columbinum Linn. and the smooth-fruited form of **Papaver Argemone** Linn. Ulceby-cum-Fordington, 3rd September, 1890! (J.B.D.), both on the chalk.

Trifolium fragiferum Linn. On the chalk at Rigsby and Miles Cross Hill near Alford, seven miles from the sea, in each case by the road-side, 6th September, 1890! (J.B.D.); also on the Boulder Clay below the hill. On the Tealby Clay by the road-side, at the foot of Dalby Hill near Spilsby, ten miles from the sea, 15th September, 1890 (J.B.D.).

Bupleurum tenuissimum Linn. Mumby-Chapel Point, August 1886! (J. Eardley Mason).

Carum Petroselinum Benth. In plenty on the sides of the railway-cuttings between Louth and North Willingham—perhaps the remains of former cultivation in the fields about (1889 and 1890!) F. A. Lees. Mablethorpe sand-hills, 4th August, 1890!

Eupatorium cannabinum Linn., which is not included in Britten's lists in White's Lincolnshire Directory, either for 1872 or 1882, is found in several parishes in the Alford District; our first record is for Alford, 24th July, 1885 (J. W. Chandler).

Lactuca virosa Linn. Mablethorpe sand-hills, 4th August 1890!

Sonchus arvensis var. **glabra** Lond. Cat. Mablethorpe, 4th August, 1890! (Mrs. A. G. Jarvis), not previously recorded for North Lincolnshire. Aby, 13th August, 1890 (J. W. Chandler).

Samolus Valerandi Linn. Alford, 24th July, 1885 (J. W. Chandler). Mablethorpe, 4th August, 1890! (F. Altoft).

Cynoglossum officinale Linn. Leadenham Low-field (South Lincolnshire), July 1884 (J.B.D.). Mablethorpe sand-hills, 4th August, 1890!

Solanum nigrum Linn. Well Vale, 21st October, 1885 (J. W. Chandler).

Lamium amplexicaule Linn. Alford, 1st July, 1888! (J. E. Mason). Skegness, 27th July, 1889! (J.B.D.). Not in either Britten's or Fowler's lists.

Plantago Coronopus Linn. Skellingthorpe (South Lincolnshire), on gravel by the roadside, 21st June, 1890 (J.B.D.).

Hippophaë rhamnoides Linn. Mumby-Chapel, August 1890 (J. E. Mason). Ingoldmells Point, 9th August, 1890 (J.B.D.).

Hydrocharis Morsus-ranæ Linn. Mablethorpe, 4th August, 1890!

Stratiotes Aloides Linn. Flowering in a pond at Woodhall, 20th June, 1890 (J. E. Mason). The pond is one of three occupying part of a hollow apparently once a gravel-pit.

Epipactis latifolia. Welton Wood, 13th August, 1890! (F. W. Gresswell): Woodthorpe Wood, 23rd August, 1890 (J.B.D.); both on the Boulder Clay.

Asparagus officinalis Linn. (marked with a ? in Britten's list), Sand-hills north of Mablethorpe, 4th August, 1890! This in Mr. Lees' opinion is truly wild, though it does occur but sparingly now; for one reason—among others—that Dr. Martin Lister mentions, in his 'Journey to Paris' (1698), having tried to reclaim it for the table, by cultivating plants taken from these very sand-hills, but in vain, it remaining tough, bitter, and uneatable. It has, clearly, therefore, existed for 200 years on the coast, surely long enough to establish its claim to nativeness.

Asplenium Adiantum-nigrum Linn. Spilsby, 9th September, 1889! (Mrs. L. B. Davy). Burgh-le-Marsh Church, two tufts, 4th September, 1890 (J.B.D.).

NOTE—PHANEROGAMIC BOTANY.

Œnanthe lachenalii in Cumberland: a rectification.—I believe I made a mistake in identifying the Œnanthe found by the Wath Creek, near Skinburness (see Nat., Oct. 1890, p. 304), as *Œ. fistulosa*. I now recognise it as *Œ. lachenalii*. I knew that *Œ. fistulosa* grew in the neighbourhood, having gathered it on Salta Moss some years ago; and somewhat rashly concluded that I had simply discovered a fresh station for that plant. Both forms are rarities with us, though clearly indigenous.—Wm. Hodgson, Workington, Oct. 8th, 1890.

ON THE ORIGIN OF THE UPPER DRIFT SANDS AND GRAVELS OF NORTHUMBERLAND.

G. W. BULMAN, M.A., B.Sc.,
Corbridge-on-Tyne.

WHAT are known as the 'Upper Drift Sands and Gravels' of Northumberland are a somewhat difficult series of deposits to decipher. They are found resting on the Boulder Clay, and fringing the sides of the chief valleys; and consist of very irregularly stratified sand and gravel of various degrees of coarseness. Their general appearance in section is strongly suggestive of river-action; the stratification is extremely rude and variable; the coarsest gravel may give place in a few feet or inches, both horizontally and vertically, to fine sand. Outwardly, they present characteristic rounded outlines, often hillocky and irregular, and add an important feature to the scenery of south-eastern Northumberland.

Good sections are to be seen at Farnley and Thornborough Scars, a little to the east of Corbridge Station: on the right bank of the South Tyne between Haydon Bridge and Bardon Mill; on the Wansbeck above Morpeth; and on the Font, a tributary of the latter river.

That they are aqueous and not glacial deposits is indicated by the existence of stratification, and the rounded state of the contained fragments; while the nature of the bedding points to fluviatile rather than marine conditions.

As a broad and general outline of the manner in which these deposits were formed, I propose the following hypothesis: During the prevalence of the ice-sheet and glaciers, the eastern and lower part of the county had its valleys and ravines filled up to a certain height with boulder-clay, so as to form a broad level area above the old depressions. To this work of the ice is due one of the striking features in the physical geography of Northumberland at the present day, viz., the hilly western district, and the great plain of the eastern.

Also as a result of ice-action, moraines fringed the sides of the valleys, and stretched across the country in lines marking the melting of the ice. As the intense cold passed away, rains and rivers commenced their work, and this morainic matter was carried down, more or less rounded, and spread out over the plain of boulder-clay. At the same time, portions of the clay itself would be denuded, and its scratched and striated pebbles mingled with the other gravel.

As the rivers then rushed down the higher valleys, which had not been filled up by boulder-clay, they would have sufficient power to

carry stones of considerable size; but, reaching the lower ground, their burden would be spread out over the boulder-clay. And, as at the present day a sudden thaw after a long continuance of frost and snow brings down the waters with a mighty rush, so, on a much larger scale, would it be at the close of the Glacial period. The waters pent up for centuries, being at last released, would course down the valleys with enormous volume and carrying power. In this way the great mass of the deposits and the large size of many of their contained fragments are accounted for.

The denudation in places of the underlying clay, by the same forces which accumulated the sand and gravel, would cause the latter to rest unconformably upon the former, as they are found to do.

It is to be observed that, whether the above explanation of the origin of these sands and gravels be accepted or not, the almost total disappearance of morainic matter—which at one time must have thickly covered the higher ground—is to be accounted for; since scarcely any true moraines are known in the county. And there can be little doubt that, granting a Glacial epoch, the vast quantities of water released at the melting of the ice *would* carry this morainic débris down to the lower grounds. Arriving at the plains of boulder-clay which filled in, altogether or in part, the old water-courses, these torrents would lose much of their carrying power, and consequently spread out their burden of now more or less rounded fragments, as already indicated. When the rivers became less powerful, and there was less glacial débris for them to carry, they would begin to cut out channels in the drift and boulder-clay down to the rock beneath, as they are still doing.

The necessity of supposing that river-action was more powerful at the close of the glacial period than it is at present, is thus noted by Prestwich:—'As the ice melted, the vast volume of water liberated by the accumulated ice and snow produced floods, which scored the plains and deepened the river-valleys.'—Geology, vol. ii, p. 469.

The fact that the old channels were more or less obliterated would cause the sand and gravel to be spread over considerable areas, and this peculiarity of the river-action of the period is likewise noted by Prestwich:—'At first these rivers were without definite channels, and spread over a considerable breadth of ground.'—Ibid, vol. ii. p. 470.

Wright, in his recently-published 'Ice Age in North America,' makes similar remarks as to the rivers of the same period in America:—'When a glacier melts, the torrents of water arising may, in a short time, tear down and distribute as sediment to distant valleys the materials accumulated by the slow movement of centuries.'

Whether, then, these 'Upper Drift Sands and Gravels' of Northumberland are the deposits in question or not, it seems obvious that, granting a Glacial period, an extensive set of irregular river-deposits must have been laid down on the boulder-clay at its close.

A reference to the 'Ice Age in North America' will show that the above suggested explanation is practically identical with that proposed for similar deposits in North America. Thus on pp. 526-7 is found the following passage:—'Towards the close of that [Glacial] period, when the land had resumed its present level and the ice had nearly all disappeared south of the Catskills, the still swollen stream brought down the superabundant loose material from the kames and moraines of the glaciated area and deposited it in the valley below. The material was so abundant that doubtless the whole channel was silted up, so that the bed of the river was considerably above that it now occupies. At Trenton it flowed over and through an extensive delta of coarse gravel forty feet above its present level; and, above Trenton, over an accumulation of gravel from 15 ft. to 20 ft. above the present high-water mark.'

In conclusion, I am far from wishing to apply the above hypothesis to *all* the sands and gravels of Northumberland. The accumulation of these on the surface of the land has been a continuous process, and they are of all ages from the Glacial epoch to the present day. It may even be suggested that some of these deposits *may* be *Preglacial*; although it is probable that the first work of the ice would be to clear away most of the pre-existing superficial accumulations.

At the period, and by the means, I have indicated, however, the surface accumulation of sand and gravel was much more active than it has been since. As the liberated water cleared away the glacial débris, and the gradually diminishing rivers formed fresh channels for themselves, their deposits of sand and gravel, lessening in amount, gradually merged into those of the present day; so that it is difficult, or perhaps, rather, impossible, to make an exact classification of Post-glacial river-gravels.

NOTES AND NEWS.

Among recently-elected Fellows of the Geological Society we notice Dr. Tempest Anderson of York, Rev. E. Jones of Embsay, Skipton, Mr. P. L. Davies of Liverpool College, and other north-country names.

We are now promised a new Yorkshire coal-field. At a meeting of land-owners and others interested in mining, held some time ago at Balne near Drax, it was contended not only that the Coal-Measures underlie the Permians of that district, but that coal might be met with within a workable depth. A committee has been formed with the view of sinking a shaft on Balne Moor. Whatever be the prospects from a commercial standpoint, geologists will watch the results with interest.

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ORNITHOLOGICAL NOTES FROM NOTTS., AUTUMN AND WINTER, 1890-91.

F. B. WHITLOCK,

Beeston, Notts.

The autumnal movements of birds began to affect us in Notts. early in August. On the 10th, I observed a flock of about a dozen Common Gulls (*Larus canus*) wheeling about over the Trent; a strong S.E. wind was blowing at the time. On the same day I noticed along the margins of the river individuals of the Ringed Plover (*Egialitis hiaticula*), Redshank (*Totanus calidris*), and a pair of Green Sandpipers (*Helodromas ochropus*). As I was returning homewards in a heavy rain a small Gull flew past me, which I felt certain was *Larus minutus*. I was subsequently informed that a bird of this species was killed about the same date.

On Aug. 24th a few Wheatears (*Saxicola œnanthe*) were flitting about our low-lying meadows; those I observed were all birds of the year. On the 29th a young male Spotted Crake (*Porzana maruetta*) was shot at Attenborough, and I met with several others previous to the commencement of the hard weather.

On the 30th a local specimen of the Greenshank (*Totanus glottis*) came into my possession; it was killed at Shelford. A little earlier in the month another example had been shot near Ilkeston, Derbyshire. A few young Chiffchaffs (*Phylloscopus rufus*) were now to be heard; they lingered with us till the 28th Sept. The Chiffchaff breeds with us very sparingly.

Sept. 1st.—A flight of Whimbrel (*Numenius phæopus*) passed over in a south-westerly direction, about seven o'clock in the evening.

Sept. 14th.—I observed many freshly-moulted Pied Wagtails (*Motacilla lugubris*) on the margins of the river. I also noted numbers of Redbreasts (*Erithacus rubecula*) haunting our local willow holts; a great many Meadow Pipits (*Anthus pratensis*) appeared at the same time. These three species were evidently on migration. Linnets (*Linota cannabina*) were numerous, and I also met with a few Twites (*L. flavirostris*) and Goldfinches (*Carduelis elegans*).

Sept. 18th to 30th.—My garden was well patronised during this period, by Goldcrests (*Regulus cristatus*), Coal-Tits (*Parus ater*), and Willow Wrens (*Phylloscopus trochilus*). I saw the first Grey Wagtails (*Motacilla sulphurea*) on the 18th. They have been unusually scarce this winter.

On the 21st I shot a fine immature female example of the Little Stint (*Tringa minuta*). It was in company with a Ringed Plover on a large bed of shingle on the Trent side. Mr. Whitaker informs me that this is the fourth authentic record of the Little Stint for Notts.

On Sept. 28th I observed a great commotion amongst a flock of Rooks (*Corvus frugilegus*), who seemed bent on reaching the clouds with all speed. The cause of the alarm was the presence of a fine Peregrine Falcon (*Falco peregrinus*), which came steadily flying down the Trent valley. A great many young Chaffinches (*Fringilla cælebs*) were to be observed at the end of September. The same may be said of Skylarks (*Alauda arvensis*) and Meadow Pipits (*Anthus pratensis*).

Oct. 1st.—A few Terns appeared on the Trent, but none were shot. They were probably the Common Tern (*Sterna fluviatilis*). About the same time a specimen of the Manx Shearwater (*Puffinus anglorum*) was shot at Bridgford. It is curious how regularly this bird occurs in the autumn in an inland county like Notts.

On Oct. 11th, a very fine example of the Common Buzzard (*Buteo vulgaris*) was shot at Owthorpe Wood in the vale of Belvoir; it measured 4 ft. 2 inches across the expanded wings.

On Oct. 19th the first flocks of Fieldfares (*Turdus pilaris*) appeared, large numbers constantly arriving up to the 7th Nov. Though this is not an early date for individuals or even small flocks, we do not as a rule expect them in any numbers until the first week in November. The Redwings (*Turdus iliacus*) arrived at the same time.

On Oct. 22nd, a fine old male Scoter (*Œdemia nigra*) was shot at Beeston, as well as two other ducks of a smaller species. I secured the Scoter but was too late to identify the smaller birds.

Oct. 26th, I noticed a few Hooded Crows (*Corvus cornix*). This species became common a little later. I also noticed flocks of Skylarks (*Alauda arvensis*) and Starlings (*Sturnus vulgaris*) arriving at intervals between the flocks of Fieldfares and Redwings.

Oct. 29th brought a few Woodcocks (*Scolopax rusticola*) several of which were shot and one brought alive into Nottingham market, having apparently been in collision with some object.

Oct. 30th, a fine male Pine Grosbeak (*Pinicola enucleator*) shot near Watnall. I have given full details elsewhere [see p. 38 of this number].

Nov. 1st.—A young Goldeneye (*Clangula glaucion*) and on Nov. 8th, a Wigeon (*Mareca penelope*), both killed near Shelford. I saw a flock of Dunlins (*Tringa variabilis*), about eleven in number, flying in a south-westerly direction on the 9th. A Water Rail (*Rallus aquaticus*) was killed by the telegraph wires near Attenborough on the 11th, probably on migration.

Nov. 22nd.—At one of our local bird-stuffers' I noticed four Common Gulls (*Larus canus*), which, I was informed, had been shot on the Trent.

On Nov. 23rd I saw a Spotted Crake (*Porzana maruetta*) splash across a broad dyke. This is a very late date for this species in Notts.

Towards the end of November we had a good number of the Common Snipe (*Gallinago cælestis*) with us; and on the 29th a large flock of Golden Plover (*Charadrius pluvialis*) passed down the Soar valley in a southerly direction.

Dec. 1st.—A Red-throated Diver (*Colymbus septentrionalis*) and a Scaup Duck (*Fuligula marila*) were shot on Wollaton Lake. A few days previously a Great Grey Shrike (*Lanius excubitor*) was killed at Dunkirk, near Nottingham.

At the beginning of December the frost set in in earnest. Six or eight Dunlins (*Tringa variabilis*) were killed near Shelford, as well as a few Teal (*Querquedula crecca*) and Little Grebes (*Podiceps minor*).

On the 13th a fine Barnacle Goose (*Bernicla leucopsis*) was shot near Eastwood.

By the 14th all still waters were frozen except in the most sheltered places, and consequently when birds desired to quench their thirst many were compelled to visit the same spot. By waiting at one water-hole I observed large numbers of the Turdinæ come down to drink, and I shot two Common Snipe (*Gallinago cælestis*), which were evidently in search of food. The hard frost being so general, ducks were either driven to the sea or to the larger and more rapid streams which remained unfrozen, and, as might be expected under these circumstances, we have had an exceptional winter for ducks on the Trent. The first specimens I secured were males of the Tufted Duck (*Fuligula cristata*) and Pochard (*Fuligula rufina*), which were shot near Beeston, the females being also killed at the same time. During the prevalence of the frost, numerous other examples of these species were procured, as well as Scaups (*Fuligula marila*), Mallards (*Anas boschas*), Wigeons (*Mareca penelope*), and Goldeneye (*Clangula glaucion*). Another Common Scoter (*Œdemia nigra*) was also obtained, and a very fine old male Goosander (*Mergus merganser*), in perfect plumage, was killed at Colwick. One or two Geese have been shot, but I have not learned of what species, except in the case of a Canada Goose (*Bernicla Canadensis*), which no doubt belonged to one of the semi-domesticated flocks in the neighbourhood. The most noteworthy event, however, has been the occurrence of the Smew (*Mergus albellus*), three specimens of which have been shot. The first, an immature bird, was killed at

Shelford about the 6th of January. The other two—a pair, and both old birds—were shot on the 17th near Beeston, the male bird being exceptionally fine.

Amongst other birds noticed during the frost have been several Bitterns (*Botaurus stellaris*), one of which was shot Dec. 22nd, at Cotgrave. Many Kingfishers (*Alcedo ispida*), I am sorry to say, have met with a similar fate. At the end of December Jack Snipe (*Gallinago minor*) were not uncommon; I put up four within a very short distance. A few Snow Buntings (*Plectrophanes nivalis*) were met with on the outskirts of Nottingham at the beginning of the new year—a most exceptional circumstance. About the same time I noticed a pair of Green Sandpipers (*Helodromas ochropus*) exposed for sale in our market, both of which I was informed were local birds. A Dipper (*Cinclus aquaticus*), one of a pair, was shot from a dirty dyke running up to the streets of Nottingham, about the same time; and a second example was killed at Colwick a little later. A Red-throated Diver (*Colymbus septentrionalis*) was also procured at Colwick at the beginning of the new year. It may also be worth mentioning that a pair of Pintails (*Dafila acuta*) were killed in the neighbourhood of Borrowash, Derbyshire, early in January.

NOTES—ORNITHOLOGY.

Is the Starling Double-brooded?—In answer to a query of mine, a friend writes from Northumberland that he is of opinion the Starling is often double-brooded, and in confirmation quotes the following facts:—'Last year he had a box placed on the back wall of his house, made and placed for the purpose of Starlings breeding in them. A pair of Starlings took possession, hatched, and brought out their young, and took off with them one fine morning; exactly *four* days after the two old birds returned and again occupied the box, and succeeded a second time in getting off a brood.' A neighbour of his also had a box hung up; it was also occupied by a pair of Starlings; these also went off with their batch of young ones, and strange to say, the old birds were absent the same period, *four* days only, when they also returned and had a second brood. This is conclusive proof that they do often have two broods in a year. But a case has come under my notice—communicated to me by Dr. Russell, J.P., of this town—where a pair of birds have brought off *three* broods of young ones. They were hatched out under the eaves of Dr. Russell's house. The first lot were brought off at the beginning of March, a very early date; the second lot about April 10th; and the third lot on June 1st. Dr. Russell is confident that the same pair of birds reared *all* three broods, as one of the birds could be easily recognised—it had two or three feathers missing from one wing. I am this year having nesting-boxes fixed on my house, in the hope that they will be occupied by Starlings, and thus give me a better opportunity of watching their habits day by day.—RILEY FORTUNE, Ravensgill, Harrogate, Dec. 18th, 1890.

Water-Rail near Workington.—During the brief but keen frost at the commencement of December, a specimen of *Rallus aquaticus* was picked up on the banks of the river Derwent, near the Cleator and Workington Railway bridge, in an exhausted and moribund condition. The bird soon died, and though greatly emaciated in body, was in capital plumage. It is now in the hands of Mr. Robinson, taxidermist, of this town, by whom it was shown to the writer on the 15th inst.—WM. HODGSON, Workington, December 22nd, 1890.

DISCOVERY OF CAREX MONTANA, ETC., IN DERBYSHIRE.

CHARLES WATERFALL,
The Hague, Renishaw, near Chesterfield, Derbyshire.

About five miles from Renishaw there are what is known as Markland Grips, near Clowne. Their geological formation is magnesian limestone, and they are three in number, running almost parallel one with the other, and resembling three immense valleys that have been hollowed out in the far distant past by some superior natural agency as by glacial action.

Some four years ago, I went to 'the Grips' with a party and strolling about I found a *Carex* which was new to me. I sent it to Mr. Arthur Bennett, F.L.S., of Croydon, and he named it *Carex montana* L. I reported it to the Rev. W. H. Painter, of Knypersley, near Congleton, who was then engaged in bringing out his Flora of Derbyshire; he asked for a specimen, which I sent him, and *he* sent it to Mr. Bennett, who again passed it as *C. montana*. The Rev. W. H. Painter then asked for some specimens for the Exchange Club of the British Isles, and he sent me word that the critics of that Club had passed *Carex montana* as being correct; so I think there can be no mistake that the plant is what it is set up to be.

For the last two or three years I have found it plentifully on the edge of a wood in 'the Grips,' and it seems to me likely to be a permanency. So far as I know this is the only habitat of *Carex montana* in Derbyshire.

It grows along with other carices and grasses and plants generally. It looks very much like *C. pilulifera* while growing, but if it be dug up with a fork—so as to get the root intact—it will be found to agree with Babington's Manual, 8th edition, in the root being fibrous from a shaggy branched rhizome and also that the lowest sheaths of the plant are red.

The leaves are easily distinguished from the surrounding plants when one gets used to looking for them and they are about the same height as the fruit, thus differing from *C. pilulifera*, where the fruiting stem is from 10 to 12 inches long and curved at the fruiting end, this stem being straighter than that of *pilulifera*.

Among other plants *in* 'the Grips' I found *Anthriscus sylvestris* *Cynoglossum officinale*, *Ophrys muscifera* and on my way there I found, among others, *Blackstonia* (or *Chlora*) *perfoliata* and *Triglochin palustre*.

During the summer I found the following plants at or about Quarry Dam Park Hall Woods: *Ranunculus circinatus*, *Carex remota*, *C. vesicaria*, and, in woods, *Serratula tinctoria* and var. *monticola*.

THE FLOWERING PLANTS AND FERNS OF LITTONDALE.

REV. W. A. SHUFFREY, M.A.,
Vicar of Halton Gill and Curate of Arncliffe.

THE area designated 'Littondale' comprises the four townships of Hawkswick, Arncliffe, Litton and Halton Gill. The dale runs south-east and north-west; and forms the southern branch of the fork, which, about half a mile above Kilnsey Scar, divides the upper part of Wharfedale into two portions. Littondale is watered by the Skirfare, which receives the waters of several smaller becks in its course, and finally empties itself into the main stream of the Wharfe at Amerdale Dub, half a mile below the eastern end of the valley. There is no arable land in the dale: the whole consists of pastures and meadows with extensive moors on the higher ground. The lower end of the valley is about 600 ft. above the sea, and the highest point—the top of Penyghent (the east side of which is in Halton Gill) reaches an elevation of 2,273 ft. above the sea-level.

With such a variety of scenery and extensive range of elevation, there is, as might be expected, a very rich flora; perhaps, it may be said, as rich as any in England when it is considered that the entire area is only eight miles in length, and about three miles in width. The richness of the flora may partly be accounted for by the fact that the geological formations of the valley are most favourable to the growth of plant-life.

The strata shall be briefly described. The carboniferous mountain limestone forms the base of the valley; and on the south side in the Hawkswick and Arncliffe Clouders extends upwards to 1,700 ft., but on the north and west sides, when the mountain limestone reaches an elevation of 1,300 or 1,400 feet, it gives way to what is commonly known as the Yoredale series, a mixture of shale, limestone and grit. And this in turn, when it arrives at 1,700 or 1,800 ft., receives a covering of Kinderscout Grit which caps the long ridges, and the summits of the higher hills. It may be well to add also another fact which would affect the growth of the Cryptogams even more than the Phanerogams; the average annual rainfall amounts to 60 inches.

Amidst such physical conditions, on crag and scar, in peat bog, and on the bleak hill top, in the sheltered woods and rich meadows and pastures of the dale grow the following plants, specimens of which it has been the writer's great pleasure to collect and classify.

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The elevations at which the plants grow are not given unless they exceed those mentioned in Mr. F. A. Lees 'Flora of West Yorkshire.'

Thalictrum minus var. **montanum.** Abundant on the limestone.

Thalictrum majus. Arncliffe, 800 ft.

Anemone nemorosa. Plentiful on north side of the valley.

Ranunculus Lenormandi.

Ranunculus flammula. On the moors.

Ranunculus auricomus. Not common.

Ranunculus acris.

Ranunculus repens. Sparingly.

Ranunculus bulbosus.

Ranunculus ficaria. Common.

Caltha palustris. In wet pastures and running streams.

Trollius europæus. Plentiful on west side of the dale.

Actæa spicata. In woods on west side.

Berberis vulgaris. There are two varieties in the dale, one at Halton Gill (1,000 ft.) and one at Litton, in garden; both probably introduced.

Meconopsis cambrica. 1,000 ft. Halton Gill.

Corydalis claviculata. Arncliffe Wood. I insert this on the authority of Mr. Lees.

Nasturtium officinale.

Cardamine amara. Near water-course, infrequent.

Cardamine pratensis.

Arabis hirsuta. Plentiful locally, road-side.

Cochlearia officinalis. By rills and on hill-tops, and also in the valley; varies in size.

Barbarea vulgaris. Infrequent.

Draba verna. In stony pastures, plentiful.

Draba muralis.

Draba incana. Not common.

Thlaspi alpestre var. **occitanum.** Near old lead-mines.

Capsella Bursa-pastoris.

Helianthemum vulgare. On dry banks.

Viola palustris. On the moors.

Viola sylvatica.

Viola lutea. Arncliffe Clouders, abundant.

Drosera rotundifolia. Penyghent Moors.
Polygala vulgaris.
Silene inflata. Only a few plants; some of them approach near to the var. *maritima*.
Lychnis vespertina. Scarce.
Lychnis diurna. Very common.
Lychnis flos-cuculi.
Cerastium glomeratum.
Cerastium triviale.
Stellaria holostea. Under bushes.
Stellaria graminea. Sparingly.
Stellaria uliginosa. Common on wet moors.
Stellaria media.
Arenaria trinervia. 700 ft., near Arncliffe.
Arenaria serpyllifolia.
Alsine verna.
Sagina procumbens.
Sagina nodosa.
Hypericum perforatum. Not uncommon.
Hypericum quadrangulum.
Hypericum hirsutum.
Hypericum pulchrum. Infrequent.
Malva sylvestris. Road-side near Hawkswick.
Tilia europæa. Foxhope, 1,100 ft.
Linum catharticum. Common on dry banks.
Geranium sanguineum. Abundant in one locality.
Geranium phæum. Only one plant found in bloom, May 20th, 1890. The only record of this plant in Wharfedale.
Geranium sylvaticum. Common in two or three meadows, about 1,000 ft.
Geranium pratense.
Geranium molle.
Geranium dissectum. Infrequent.
Geranium lucidum.
Geranium Robertianum.
Oxalis acetosella.
Ilex aquifolium. 1,000 ft. and above.
Rhamnus catharticus. 1,000 ft.

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Acer pseudo-platanus. Very common.
Ononis arvensis. 900 ft., Arncliffe.
Anthyllis vulneraria.
Trifolium pratense.
Trifolium medium. Infrequent.
Trifolium repens.
Trifolium procumbens. Not common. The plants differ in size, etc., and sometimes resemble the var. *minus*.
Lotus corniculatus.
Lotus major.
Hippocrepis comosa. Not common.
Vicia Cracca. Occasionally on road-side.
Vicia sepium.
Lathyrus pratensis.
Orobus tuberosus. Pasture near Hesleden.
Prunus spinosa. The fruit is seldom plentiful.
Prunus insititia. 700 ft., Arncliffe Cote. Several old trees with green fruit. N.B.--A variety with purple fruit is found at Hubberholme, also near to Raisgill.
Prunus Avium. 800 ft. One tree in a pasture.
Prunus Padus. Common in the woods.
Spiræa Ulmaria.
Agrimonia Eupatoria.
Sanguisorba officinalis.
Poterium Sanguisorba.
Alchemilla arvensis. In few places by road-side and on rocky ground.
Alchemilla vulgaris.
Potentilla Fragariastrum. This is in bloom very early.
Potentilla tormentilla.
Potentilla reptans. Uncommon.
Potentilla anserina.
Fragaria vesca.
Rubus Idæus. Plentiful in the woods.
Rubus fruticosus. Not common; varieties undetermined.
Rubus cæsius. Rare.
Rubus saxatilis. Common in woods.
Rubus Chamæmorus. Growing generally above 1,500 ft.

Geum urbanum. Not so frequent as *rivale*.

Geum rivale.

Dryas octopetala. Still plentiful, facing the north, on limestone rocks. I have also found another station for it about 900 ft. above sea-level. N.B.—These are the only stations in Yorkshire for this plant.

Rosa spinosissima. Infrequent.

Rosa tomentosa.

Rosa canina.

Cratægus Oxyacantha.

Pyrus rupicola.

Pyrus Aucuparia.

Pyrus Malus. I know of only one tree.

Epilobium angustifolium. In a garden at Halton Gill.

Epilobium parviflorum.

Epilobium montanum.

Epilobium palustre.

Circæa lutetiana.

Ribes alpinum. Many shrubs at Foxhope.

Ribes petræum. Not common.

Ribes Grossularia.

Sedum Telephium. One station on limestone scar.

Sedum villosum. Near Cosh Farm.

Sedum acre.

Saxifraga oppositifolia.

Saxifraga stellaris. Mr. Lees has found this on Penyghent.

Saxifraga umbrosa. Still wild in one locality.

Saxifraga tridactylites.

Saxifraga granulata. Rare in this dale.

Saxifraga hypnoides.

Chrysosplenium oppositifolium.

Chrysosplenium alternifolium. Rare.

Parnassia palustris. Common.

Sanicula europæa.

Helosciadium nodiflorum. In a pool, 800 ft.

Ægopodium Podagraria. Near Litton, 800 ft.

Bunium flexuosum. Common.

Pimpinella Saxifraga.

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Heracleum Sphondylium.
Angelica sylvestris.
Peucedanum Ostruthium. In farm gardens up to 1,300 ft.
Chærophyllum sylvestre.
Chærophyllum temulum.
Myrrhis odorata. Plentiful.
Hedera Helix.
Cornus sanguinea.
Sambucus nigra. Not many trees.
Viburnum Opulus.
Galium boreale. I insert this as it is said to have been found at Arncliffe in 1841, but I have not seen it.
Galium cruciatum.
Galium verum.
Galium sylvestre.
Galium saxatile.
Galium uliginosum.
Galium Aparine. Not common.
Asperula odorata.
Sherardia arvensis. Scarce, up to 1,000 ft.
Valeriana dioica.
Valeriana officinalis.
Scabiosa succisa.
Scabiosa Columbaria.
Scabiosa arvensis. 800 ft., less common than the other varieties.
Silybum Marianum. Only in garden.
Carduus nutans.
Carduus acanthoides. 750 ft.
Cnicus lanceolatus.
Cnicus palustris.
Cnicus heterophyllus. Plentiful.
Cnicus arvensis.
Carlina vulgaris.
Arctium minus. Not common.
Serratula tinctoria. I insert this on the authority of Mr. Lees. I have not found it in the dale, but I have seen many plants near Malham Tarn.

Centaurea nigra.
Centaurea scabiosa.
Artemisia vulgaris. Only one station in the dale.
Chrysanthemum Leucanthemum. Not common.
Tanacetum vulgare. In waste at Litton, and in a garden at Foxhope, 1,100 ft.
Achillea Millefolium.
Achillea Ptarmica.
Gnaphalium dioicum.
Senecio vulgare.
Senecio Jacobæa. Too common.
Senecio saracenicus. 1,000 ft., Halton Gill.
Bellis perennis.
Solidago Virga-aurea. Chiefly on the south side of the dale.
Tussilago Farfara. The first flower that appears in bloom in the spring. On Feb. 24th, 1890, Feb. 21st, 1884.
Petasites officinalis.
Eupatorium cannabinum. 700 ft., only one station.
Lapsana communis.
Hypochæris radicata.
Leontodon hispidus.
Leontodon autumnalis.
Tragopogon pratensis. Only one specimen, on roadside.
Taraxacum officinale.
Lactuca muralis. Plentiful in one locality.
Sonchus asper. Scarce.
Crepis hieracioides. (F. A. Lees).
Crepis paludosa.
Hieracium pilosella.
Hieracium anglicum. (F. A. Lees).
Hieracium alpinum.
Hieracium murorum.
Hieracium prenanthoides. Not common.
Campanula latifolia.
Campanula rotundifolia.
Vaccinium Vitis-idæa.
Vaccinium Myrtillus.
Erica Tetralix.

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Calluna vulgaris.
Pyrola minor. (F. A. Lees).
Fraxinus excelsior.
Ligustrum vulgare. In garden, Arncliffe.
Erythræa Centaurium. 800 ft., sparingly.
Gentiana Amarella.
Gentiana campestris. Not common.
Polemonium cæruleum. In one locality.
Verbascum Thapsus. I found two plants in this year on road-side; probably an escape from garden.
Menyanthes trifoliata. I insert this as it was common in a wet pasture some years ago; but it has now disappeared, probably on account of the draining of the field.
Scrophularia nodosa.
Digitalis purpurea. Very rare.
Linaria Cymbalaria. On a garden wall.
Mimulus luteus. Abundant, near running stream.
Veronica agrestis.
Veronica arvensis.
Veronica officinalis. Infrequent.
Veronica Chamædrys.
Veronica montana.
Veronica Anagallis.
Veronica Beccabunga.
Euphrasia officinalis.
Bartsia Odontites. On road-side.
Pedicularis palustris.
Pedicularis sylvatica.
Rhinanthus Crista-galli.
Melampyrum pratense. Scarce, on moors.
Mentha hirsuta.
Mentha arvensis.
Thymus Serpyllum.
Origanum vulgare.
Calamintha Clinopodium.
Calaminthe Nepeta. Infrequent.
Prunella vulgaris.
Stachys sylvatica.

Stachys palustris. 750 ft., sparingly.
Lamium purpureum.
Lamium album. 800 ft., not common.
Ajuga reptans.
Teucrium Scorodonia.
Myosotis cæspitosa.
Myosotis sylvatica.
Myosotis repens.
Pinguicula vulgaris.
Primula vulgaris. Plant in bloom at Arncliffe on Jan. 5th, 1890.
Primula variabilis [hybrid].
Primula veris.
Primula farinosa. Abundant on limestone.
Lysimachia nemorum.
Plantago major.
Plantago media.
Plantago minor.
Plantago maritima. By the road-side.
Chenopodium Bonus-Henricus. 1,000 ft., Halton Gill.
Atriplex patula var. **erecta.** In garden, Arncliffe.
Rumex obtusifolius, and one or two additional varieties, which the writer omitted to identify.
Rumex Acetosa.
Rumex Acetosella.
Rumex scutatus. In gardens.
Polygonum Bistorta.
Polygonum Persicaria.
Daphne Mezereum. This once grew wild in a wood near Arncliffe, but it has not been seen lately. It still grows in my garden.
Euphorbia Peplus.
Euphorbia Lathyris. Both varieties as a garden weed.
Mercurialis perennis.
Urtica dioica.
Ulmus montana.
Quercus Robur. Only seven or eight trees in the dale. A very fine tree growing at 1,000 ft.
Fagus sylvatica.
Corylus Avellana.

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Alnus glutinosa.
Betula alba.
Populus tremula.
Salix Caprea.
Salix pentandra.
Salix purpurea.
Salix viminalis.
Salix phylicifolia.
Salix repens. (F. A. Lees).
Pinus sylvestris.
*Larix europæa. A great number of these trees have died in recent years.
*Abies excelsa.
Juniperus communis. (Archdeacon Boyd).
Taxus baccata.
Arum maculatum.
Orchis mascula.
Orchis incarnata.
Orchis maculata.
Habenaria conopsea.
Habenaria albida. (F. A. Lees).
Habenaria viridis.
Habenaria chlorantha. Plentiful in a few localities.
Ophrys muscifera. 800 ft. I found five or six plants in an open wood, but I have not seen them during the last three years.
Listera ovata.
Epipactis palustris. (Archdeacon Boyd).
Epipactis latifolia. The Archdeacon also found a variety some years ago which is sometimes designated *rubra*.
Cypripedium Calceolus. This rare plant still grows in a garden in the dale.
Galanthus nivalis. 1,000 ft., Halton Gill.
Paris quadrifolia.
Polygonatum officinale. Rare.
Convallaria majalis. Abundant in a wood up to 1,000 ft.

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*[This valuable contribution would have been rendered much more so had Aliens and planted species been indicated by some mark, distinguishing them from native plants of the dale.—EDS. NAT.]

Narcissus Pseudo-narcissus. About 900 ft., near Arncliffe.
Scilla nutans.
Allium scorodoprasum. A few roots in one locality.
Allium ursinum. Too common in some parts.
Narthecium ossifragum. Infrequent.
Colchicum autumnale. Abundant in one pasture.
Scirpus palustris. Mill-pond, Arncliffe.
Juncus communis. Other species not determined.
Eriophorum vaginatum.
Eriophorum angustifolium.
Pteris aquilina.
Blechnum boreale.
Asplenium Ruta-muraria.
Asplenium Trichomanes.
Asplenium viride. This is getting less plentiful.
Athyrium Filix-fœmina.
Cryptogramme crispa. Fountains Fell; Archdeacon Boyd.
Scolopendrium vulgare.
Cystopteris fragilis. Abundant on the limestone.
Polystichum lonchitis. I have not found this. Archdeacon Boyd tells me that there were many plants on the Arncliffe Clouders about forty years ago.
Polystichum aculeatum.
Polystichum angulare.
Lastræa Filix-mas.
Lastræa rigida. (Archdeacon Boyd).
Lastræa dilatata.
Polypodium vulgare.
Polypodium robertianum (calcareum).
Ophioglossum vulgatum. 1,100 ft. About twelve plants seen five or six years ago on shady slope, but although I have visited the same spot and searched diligently two or three times in each year, they are not now to be seen.
Botrychium Lunaria. In some seasons the plants are numerous, in others they are scarcely to be found.
Selaginella selaginoides.
Lycopodium Selago.
Equisetum sylvaticum.
Equisetum palustre.

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SOME ANNULOSA FROM CUMBERLAND AND YORKSHIRE.

Rev. HILDERIC FRIEND, F.L.S.,

President of the Wesley Naturalists' Society, and Vice-President of the Carlisle Microscopical Society, Author of 'Flowers and Flower-Lore' and other works; Idle, near Bradford.

In continuation of my list of Earthworms printed on p. 13, I venture to submit a brief notice of some other representatives of the lowly animal life of Cumberland and Yorkshire. As the lists are only intended as contributions to the subject, I have not attempted to classify the species enumerated.

On the Solway we find large quantities of Lob-worms (*Arenicola piscatorum* Cuvier), which the fishermen employ as bait for marine fish. Syn. *Lumbricus papillosus* Müller ('Fabric., Faun. Grönl..' p. 283; 'Ann. des Sc. Nat.,' xxx, p. 420, pl. xxii, fig. 8-12; 'Reise in den Sibiriens, ii, pt. 1, p. 17). *Lumbricus marinus* Belon ('Linn. Müll., Zool. Dan.,' iv, p. 39; Grube, 'Fam. der Ann.,' 76).

The White-worm (*Nephthys longisetosa* Œrsted) of the fishermen is also fairly common, but is invariably rejected as unfit for bait (cf. Grube, 'Fam. der Ann.,' p. 53; Œrsted, 'Grönl. Ann. Dors.,' p. 43, tab. vi, fig. 75-6; Johnston's 'Cat. of Br. Worms,' 172).

I found one specimen of another species during 1890, but it has been put aside during my removal.

Several members of the Leech family occur in the North of England, of which I have collected the following:—

(1) *Nephelis octoculata* L., under stones in Monkhill Loch, near Carlisle, May 1890; a curious creature, with its eggs and embryos attached to the ventral surface; synonymy given in Grube, 'Fam. der Ann.,' p. 110.

(2) *Clepsine sexoculata* Moq. Tand., and

(3) *Clepsine bioculata* Müller. The synonyms are very numerous, and are fully given by Grube, loc. cit., and more recently by Vejdovsky, 'System und Morphologie der Oligochæten.' Found in the same locality, where also one or two species of *Lumbriculus* abound, and some species of *Enchytræus*. These I am now engaged upon.

I have been able to work out the doubtful *Lumbricus multispinus* Grube, but as the story is too long for these pages, it will be published elsewhere. As I have some other *Enchytræidæ* to enumerate in a future contribution, I shall withhold the modern synonymy, and merely state that Grube's worm is the same as Dugès' *Tubifex pallidus* ('Ann. des Sc. Nat., viii, 32), and Müller's *Lumbricus vermicularis* (Johnston's 'Catalogue of British Worms,' p. 63; Grube,

'Reise in den Sibiriens,' ii, pl. 1, p. 19; 'Fam. der Anneliden,' p. 103, etc.), or a closely-allied species.

Up till the present, Eisen's Worm (*Lumbricus eiseni* Levinsen) has, so far as I am aware, been found in Britain only by myself, as recorded on page 14. I have just found it in considerable numbers at Apperley Bridge, Yorks., thus making the first Yorkshire record. It is one of the handsomest and most delicate of our British Lumbrici. The following particulars are from my own observations, as I have not yet been able to consult Levinsen's description. Length, 1½ to 2 inches; colour, deep-red, with iridescence, chiefly observable dorsally when the worm has been placed in spirit. Clitellum occupying segments 24 to 31, reddish-brown or lighter. The first dorsal pore behind the fifth segment. The internal structure is interesting. The gizzard is placed just in front of the clitellum, whereas in the common earth-worm there are about ten segments between. There are only two pairs of vesiculæ seminales so far as I can find, the so-called hearts are in segments 8 to 13. I have as yet seen no calciferous glands, but there are three pairs of glands in front of the vesiculæ which are prominent and need investigation. As worms differ in their internal appearance at different periods of the year these observations must be taken as applicable to mid-winter.

I have found three or four species of earthworm parasites, including the old *Anguillula lumbrici* among the Entozoa, *Monocystis lumbrici* in the Gregarinidæ, and two parasitic Infusoria, together with an external parasite or messmate belonging to the Vorticellas or Rotifers which I have not been able to identify hitherto.

CAMBRIAN AND SILURIAN ROCKS OF EWCROSS, DUFTON, AND SHAP.

The Cambrian Rocks and Silurian Base of Ewcross, Dufton, and Shap Wells. By ROBERT R. BALDERSTON. 25 pp. and map. Lancaster. 1890.

IN this pamphlet (a paper read before the Lancaster Philosophical Society) the author begins by pointing out the necessity of being prepared, in the Lower Palæozoic rocks of the area in question, for inversions and reversed faults; the possibility that some breccias and conglomerates may be due to crushing; and the value of a careful study of strikes and dips in the cleavage as well as the bedding. But when we come to the working out of the subject, we are disappointed. The district is, on any theory, a highly-disturbed one, and is mostly hidden by newer rocks: to take the field against such odds we must avail ourselves to the full of the two chief arms of the geological attack—palæontology and petrology. Our author, however, utterly ignores fossil evidence, and does not appear to have

examined the rocks themselves any more minutely than can be done in the field.

For instance, he tells us that the calcareous rocks seen north of the falls in Shap Wells Gill are metamorphosed Cambrians, 'probably about twice the age' of the Coniston Limestone proper; whereas this Lower Coniston Limestone is recognisable at many points in Westmorland, and contains the same fauna as the Upper, from which it is separated only by some rhyolitic lavas, etc. Again, he states that the rock quarried at Twistleton Dale House, near Ingleton, is 'simply a brecciated thrust fault'; but he does not profess to have made any careful examination of its character, and Mr. T. Tate, from a microscopical study of the same rock, has recently shown that it is a volcanic tuff containing detritus from several distinct sources. The evidence on which the author bases his theory of the structure of the district seems to be vitiated throughout by want of attention to such points as these, and this is the more to be regretted, since he has evidently made a very close survey of most of the ground he describes.

The details of field-evidence are not easily followed, for, though there are frequent references to a plate of sections, our copy contains no such plate. The author's test-section is in Crummach Dale; and here, at Austwick Beck Head, he seems to have missed the Silurian conglomerate underlying the 'tesselated mudstone,' though it is exposed in the basin of the more southerly of the two springs. The rocks underlying this undoubtedly belong to the Coniston Limestone, as might have been found by tracing them eastward up Moughton Sike, where they are richly fossiliferous. In Norber Sike, so far as we can gather, the author mistakes for the conglomerate one of the ashy beds in the Coniston Limestone series; or so it appears from the mention of a 'cap of felstone trap.' On this latter point, however, we fail to understand the author, for he elsewhere makes the statement that 'there are no contemporaneous traps in either series below the Tarrannons.' Were it not for the context, we should suppose *below* to be a misprint for *above*; but it is clear that the nature of the rocks met with has always been judged vaguely by their appearance in the field. The suggestion of a metamorphic origin for mica-trap dykes could not have come from any geologist who had ever placed a slice of one of these rocks under the microscope.

While acknowledging the boldness of Mr. Balderston's ideas and the amount of observation embodied in his paper, we cannot admit that he has thrown much light upon the difficult questions involved in the structure of this interesting tract of the older rocks.—A.H.

ADDITIONS TO THE FLORA OF THE ALFORD DISTRICT OF NORTH LINCOLNSHIRE DURING 1890.

J. BURTT DAVY,

Hon. Sec. Alford Naturalists' Society, Alford, Lincs.

THE Alford Naturalists' Society's Report on the work of the summer season of 1890, which has just been printed and circulated, shows that during the past season eighty-three flowering-plants and four ferns have been added to the Society's Botanical Register, making the total number of species recorded for the district = 404 Phænogamia and 12 Filices. Three of these are believed to be new vice-county records, viz.:—

Sonchus arvensis var. **glabra** Lond.Cat. Mablethorpe, 4th August (Mrs. A. G. Jarvis).

Epipactis media Fries. Aby, 4th August (J. W. Chandler).

Luzula multiflora var. **congesta** Koch. Aby, 9th May (J.B.D.).

Of the other additions to the district list, the most noteworthy are:—

Viola hirta L.
Silene noctiflora L.
Hypericum hirsutum L.
Geranium columbinum L.
Trifolium fragiferum L.
Valerianella dentata Poll.
Pimpinella Saxifraga L.
Pimpinella major Huds.
Dipsacus pilosus L.
Cnicus eriophorus Hoffm.
Digitalis purpurea L.
Epipactis latifolia Lond.Cat.
Bromus asper Murr.
Brachypodium pinnatum Beauv.
Aspidium lobatum Sm.
Lastræa dilatata Presl.
Lastræa spinulosa Presl.
Ophioglossum vulgatum L.

Mr. F. Arnold Lees has most kindly identified specimens of all of the above.

Only two excursions were made by members of the Society jointly during the season. The first of these was on the 14th June, when the following specimens were found:—*Valeriana officinalis* L. and *Orchis incarnata* L., on marshy ground at Aby; *Vicia sepium* L., *Veronica montana* L., *Orchis morio* L., and *Luzula pilosa* Willd., in Claythorpe parish; and *Lysimachia nemorum* L., *Habenaria chlorantha* Bab., *Athyrium Filix-fœmina* Roth., and *Lastræa spinulosa* Presl., in Tothill Wood.

The second excursion was made on Bank Holiday, August 4th, when Mr. F. Arnold Lees, of Leeds, kindly undertook to lead the party—consisting of members of the Louth, Alford, Grimsby, and Hatton Naturalists' Societies—in an investigation of the Mablethorpe flora; the party also had the acceptable company of three members of the Ravensthorpe (Dewsbury) Naturalists' Society. After proceeding about two miles over the sandhills northward, and there being no apparent variation in the flora to tempt them farther in that direction, the members bent their steps inland to search the numerous dykes and drains of the 'Marsh' for aquatic plants. During the day 142 Phanerogamia were noted, 120 being in flower: of these, 40 had not been previously recorded for the district. The most noteworthy were, on the sandhills:—*Rosa canina* var. *tomentella* (Leman), not in flower; *Sedum acre* L., *S. rupestre* Huds. (a garden escape), *Carum Petroselinum* Benth. (not in flower, also an escape), *Erigeron acre* L., *Cnicus acaulis* var. *caulescens*, *Crepis virens* L., *Leontodon hirtus* L., *L. hispidus* L., *Lactuca virosa* L., *Cynoglossum officinale* L., *Calystegia Soldanella* R.Br., *Lycium barbarum* L. (here a firmly-established garden escape), *Salsola Kali* L., *Hippophaë Rhamnoides* L. (in fruit); *Orchis pyramidalis* L., *Asparagus officinalis* L., *Allium vineale* L. (in seed): *Ammophila arundinacea* Host., and *Elymus arenarius* L. In and beside the drains and dykes were found, among others:—*Ranunculus circinatus* Sibth.; *Myriophyllum spicatum* L., *Conium maculatum* L., *Apium graveolens* L., *Sium latifolium* L., *Œnanthe fistulosa* L., *Œ. lachenalii* Gmel., *Silaus pratensis* Bess., *Galium palustre* L., *Achillea Ptarmica* L., *Samolus Valerandi* L., *Veronica Anagallis* L., *Utricularia vulgaris* L., *Polygonum amphibium* L., *Elodea canadensis* Michx. (introduced into England about the year 1841), *Hydrocharis Morsus-ranæ* L., *Juncus glaucus* Ehrh., *J. obtusiflorus* Ehrh., *Sparganium simplex* Huds., *Lemna gibba* L., *Butomus umbellatus* L., *Potamogeton natans* L., *P. perfoliatus* L., *P. crispus* L., *P. densus* L., *P. pusillus* L., *P. pectinatus* L., *Scirpus maritimus* L., and *Glyceria aquatica* Sm. The fields and road-sides yielded:—*Papaver Somniferum* L. (a well-established Colonist), *Malva rotundifolia* L., *Filago germanica* L., *Pulicaria dysenterica* Gærtn., *Senecio Jacobæa* var. *floscosus* (Jord.), *Sonchus arvensis* var. *glabra* Lond.Cat., *Carex vulpina* L., and *C. riparia* Curtis. On the permanent way occurred *Erysimum cheiranthoides* L. and *Linaria viscida* Moench; and *Plantago maritima* L., *P. Coronopus* L., and *Aster Tripolium* L. were found on the muddy banks of the catch-waters; the latter—which was not in flower—was only seen at Trusthorpe.

BAGNALL'S FLORA OF WARWICKSHIRE.

The Flora of Warwickshire. By Jas. E. Bagnall, A.L.S. London: Gurney and Jackson, 1891. 519 pp., with Map.

Mr. Bagnall has achieved a good and great work and we heartily congratulate him upon its publication. His name as a botanist of no mean repute has been recognised for many years, and this, his crowning work up to the present, will, we are sure, long stand as a monument 'more lasting than brass' to his genius, perseverance, careful work and conscientiousness.

In its arrangement, Mr. Bagnall has taken up pretty much the same lines as were followed in the 'Flora of West Yorkshire' issued by the Y.N.U. in 1888. The date of the first record where it is known is given under each species, with references to 'Topographical Botany,' Purton's 'Midland Flora' (1817-21) and Syme's 'English Botany,' followed by localities under each of the separate 10 river basins, with authorities for the localities and in some cases dates. The type is good, and each genus and species being printed in a heavier letter renders them very easy of reference, which is also assisted by the head-lines on each page. The work includes, besides the flowering plants and ferns usually included in county floras, the Mosses, Hepaticæ, Lichens, and Fungi (Hymenomycetes and Gasteromycetes) in the latter of which Mr. W. B. Grove, M.A., has been Mr. Bagnall's collaborator.

In reviewing this work we are naturally led to compare it with a similar Flora for a neighbouring county, that of Leicestershire, issued by the Leicester Literary and Philosophical Society and edited by Mr. F. T. Mott, F.R.G.S., and others, in 1886, but in doing this we find some discrepancies.

Mr. Mott in his general summary gives the number of Leicestershire *species* as 1980, but he includes *Algæ* (234 sp.), and these are not included by Mr. Bagnall, therefore, for comparison, they must be deducted, leaving Leicestershire 1744 as compared with 1023 quoted by Mr. Mott for Warwickshire. Leaving out all the Acrogens except the Vascular Acrogens, Mr. Mott's figures are - Leicestershire species 891; Warwickshire total species, 1017. Comparing this with Mr. Bagnall's summary, we find his numbers for Warwickshire to be 1309, but of these 236 are varieties, leaving 1073, excluding Acrogens. Mr. Bagnall's list, including varieties, is 2457. Mr. Mott's estimate for Leicestershire on the same lines (excl. Algæ) = 1901. Unfortunately, Mr. Bagnall's are not consecutively numbered as are Mr. Mott's, but we must leave these discrepancies to be accounted for by the respective authors.

March 1891.

Among the plants recorded for Warwickshire but not for Leicestershire in these two works we find, amongst others, the following :—

Erophila præcox.
Dianthus Armeria.
Stellaria umbrosa.
Elatine hexandra.
Claytonia perfoliata.
Hypericum dubium.
Linum angustifolium.
Geranium columbinum.
Vicia lathyroides.
Lathyris Aphaca.
Poterium *muricatum.*
Callitriche obtusangula.
Carum segetum.
Myrrhis odorata.
Œnanthe crocata.
Wahlenbergia hederacea.
Vaccinium Oxycoccos.
Vaccinium Vitis-Idæa.
Centunculus minimus.
Cuscuta epithymum.
Utricularia minor.
Sparganium neglectum.
Carex axillaris.
Carex elongata.
Carex curta.
Carex stricta.
Carex distans.

Among the plants recorded by Mr. Mott for Leicestershire, but not by Mr. Bagnall for Warwickshire, we note a smaller number, including the following :—

Gentiana campestris.
Symphytum tuberosum.
Orobanche Hederæ.
Orobanche cærulea.
Lamium intermedium.
Sparganium natans.
Potamogeton heterophyllus.
Eriophorum latifolium.

[N.B. Rubus, Rosa, Hieracium, Salix and Graminæ not considered].

Comparing the numbers as well as they can be compared with our West Yorkshire Flora, we have—

	Mott's Estimate. L.	W.	W.Y.
Dicotyledones	661	776 ...	759
Monocotyledones	199	211 ...	237
Vascular acrogens	31	31 ...	47
	891	1018 (*a*)	1043
Characeæ...	4	7 ...	12
Musci	179	236 ...	347
Hepaticæ...	49	44 ...	108
Lichenes	177	101 ...	234
Fungi	446	*727 ...	†987
Algæ	234	— ...	379

(*a*) Bagnall's estimate, 1073. * Species and vars.

† This figure includes Hymenomycetes, Gasteromycetes, Coniomycetes, Hyphomycetes, Physomycetes and Ascomycetes. Warwickshire only the two first.

C.P.H.

NOTE—LEPIDOPTERA.

Acronycta alni Larva in North Lincolnshire.—On August 23rd, 1890, I found a larva of *Acronycta alni* L. in Stockhill Wood, Strubby, near Alford. When found, it was at rest on *Geum urbanum* L., under the shade of a Poplar. I brought the larva home hoping to obtain an imago, but, unfortunately, it died a few days afterwards.—E. WOODTHORPE, Alford, Lincolnshire, 4th Feb. 1891.

Naturalist.

FIRST REPORT OF THE GEOLOGICAL PHOTOGRAPHIC COMMITTEE OF THE YORKSHIRE NATURALISTS' UNION.

JAMES E. BEDFORD, F.G.S.,

Leeds: Honorary Secretary to the Committee.

This Committee was first appointed at the Hull meeting of the Union in 1889. The late Mr. Adamson advocated the formation of such a committee by the Union to work in conjunction with, and on the same lines as the British Association 'Committee on Geological Photographs.' The suggestion was adopted and a Committee appointed as follows:—James W. Davis, F.G.S. etc., Chairman; Rev. E. M. Cole, F.G.S.; Godfrey Bingley; F. W. Branson, F.C.S.; Geo. Fowler Jones, F.R.I.B.A.; F. Fielder Walton, F.G.S. (President Hull Geological Society); and James E. Bedford, F.G.S., Hon. Sec.

Two meetings of the Committee have been held, namely, March 12th and August 27th; particulars of these meetings will be found in the minute book.

Your Secretary was authorised by the Secretaries of the Union to print circulars for distribution amongst geologists and photographers and to procure albums for the reception of the photographs. Two circulars were issued setting forth the objects of the Committee and asking for assistance in the work. The circulars were sent to all the Yorkshire Photographic Societies (eighteen in number) but with little result—as only two Societies officially acknowledged receipt of them. Particulars were also sent to many gentlemen resident in various parts of the county who were known to take interest in photography.

Your Committee has been greatly assisted by members of the Leeds Geological Association and the Leeds Photographic Society, several gentlemen who are members of both Societies having contributed large numbers of prints to the section. Whenever possible, prints have been supplied in duplicate, one of which has been forwarded to the British Association Committee and one retained by the Committee of the Yorkshire Naturalists' Union. Many subjects of great interest have been secured, some of which are valuable as they cannot be reproduced. This refers to photographs of subjects since removed, as, for instance, fossil trees, etc., laid bare in quarrying.

Your Secretary has corresponded with Mr. Jeffs, the Secretary of the British Association Committee, and has received great assistance from him in this matter. Mr. Jeffs has frequently expressed his satisfaction with the results from the Yorkshire Committee during its first year's work.

March 1891.

At the meeting of the British Association held in Leeds in September last, a collection of geological photographs, including those contributed by the Yorkshire Naturalists' Union, was exhibited in the Geological Section, and remained on view daily. Very great interest was taken in the exhibit by many eminent geologists and other scientific men then present in the town, and many expressions of approval and suggestions for future work and further extension of the scheme were made to Mr. Jeffs and to your Secretary. As an instance, it may be mentioned that Mr. Wilkinson, the Director of Mines to the New South Wales Government, exchanged lantern slides of geological subjects in Australia for slides taken by members of this Committee.

The following particulars relating to the Yorkshire Section are taken from the British Association Report, as issued to the members at the Leeds Meeting. Total number of photographs sent in from all parts of the British Isles, 196; of which Yorkshire contributed over 100. The report says:—'The only county which has so far undertaken such systematic work is Yorkshire. In this county that valuable aid to scientific progress, the Yorkshire Naturalists' Union, has already aided the work of the British Association by the establishment of local committees charged with special objects of research. As soon as possible a Geological Photographic Section was formed, of which Mr. James W. Davis was appointed chairman, and Mr. James E. Bedford secretary. This section has sent over a hundred copies of photographic prints, with descriptions, the work of its members in the county of York, besides other localities further afield. This Committee are much indebted to the officers of the Yorkshire Geological Photographic Section for their valuable assistance.'

The report also states:—'It is with great regret that the Committee have to record the decease of Mr. S. A. Adamson, who was a most active member, and to whose exertions and influence the progress of the work in Yorkshire is largely due.' A list of photographs is appended.

Your Secretary received a letter from Mr. Jeffs, dated October 10th, which contains the following paragraph:—'Will you kindly, officially, convey the best thanks of the Committee to all the members of the Photographic Section of the Yorkshire Naturalists' Union, who so assiduously worked for us, and enabled so fine an exhibit of photographs to be shown at Leeds. I personally feel much indebted to you for all you have done.—Yours very faithfully, O. W. Jeffs.'

Your Secretary has much pleasure in thus stating how much the work of the Section has been appreciated by the British Association Committee, who, in recognition of this, have elected our Chairman

(Mr. Davis) and your Secretary (Mr. J. E. Bedford) members of the Committee.

It may be mentioned that the range of our labours has not been confined to Yorkshire, and that a large number of the subjects contributed by us to the British Association Committee were from Lancashire, Wales, and the Isle of Man. The British Association Report (section C) contains a full list of the photographs sent by the Yorkshire Section up to July, 1890. I have not, therefore, added it to this lengthy report, but beg respectfully to refer you to that publication for details. [We venture to supplement Mr. Bedford's list by extracting from the British Association Committee's Report all that relates to the North of England.—EDS. 'NAT.'].

FIRST LIST OF GEOLOGICAL PHOTOGRAPHS

(TO JULY 1890).

NOTE.—This list contains the subjects of all geological photographs known to have been issued. Copies of those *only* to which the *registered No.* is attached have been received by the Secretary of the British Association Committee.

Copies of any photographs desired can, in most cases, be obtained either from the photographer direct (whose address is usually given) or from the officers of the local society under whose auspices the views were taken.

The Committees have in no case assumed the copyright of photographs registered, which is presumed to be held by the photographer.

The price at which the photographs may be obtained depends upon the size of print and local circumstances, over which the Committee has no control.

CHESHIRE.

Liverpool Geological Society—per W. Hewett, Secretary. Photographed by E. Newall, 14, Elm Grove, Tranmere. Size 8¼ by 6½ inches.

REG. NO.		
1, 3, 4, 5.	Storeton Quarry, 1887	Various sections.
2.	,, ,, 1887	'Footprint bed.'
6.	Wallasey, 1887	Quarry in Lower Keuper.
7, 8.	,, Breck Road ...	Section showing 'current bedding.'
9.	Prenton Lane, Birkenh'd, 1887	Junction of Keuper and Bunter.
10.	Bidston Hill, 1887	Fissile Keuper sandstone.
11.	Hilbre Island (m'th of R. Dee)	Bunter.
12, 13.	,, ,, (Middle Island)	Conglomerate bed.
14.	Thurstaston Hill, 1887 ...	'Thor's Stone,' an outlier of the Bunter.
15.	West Kirby, 1887	Fault at Calday Grange.
16.	,, ,, ...	Junction of Keuper and Bunter.
	Flaybrick Hill, 1887 ...	Ditto.
	,, ,, 1885 ...	Fault in Keuper.
	,, ,, ...	Roche Moutonnée.
	Poulton Quarry, Wirral, 1885 (2)	Jointing in Keuper.

CHESHIRE—(*continued*).

Per J. Lomas, 23, Avondale Road, Liverpool.

REG. No.				
	Dawpool, Wirral,	1888	(4)	Boulder clay cliffs on bank of River Dee showing interbedded sands, etc.
	Hilbre Island (2)	...	...	Coast erosion.
	Wallasey (2)...	...	...	Sand-dunes, showing stratification.
	,, Breck Road		...	'Contortions' in Trias.
	Ince ...	...	...	Peat beds.
	,, (Ship Canal Sections)			Fault in Trias.

Photographed by E. Timmins, Runcorn.

32. Runcorn (lane to Higher Runcorn). Frodsham beds of Keuper.

ISLE OF MAN.

Photographed by Ed. Newall (Liverpool Geological Society).

31. Scarlett Point.
30. Port St. Mary ... ... Glaciated limestone surface.

(And some others not designated.)

Per Yorkshire Naturalists' Union (Geol. Photo. Committee). (Photographed by S. A. Warburton, 9, Banstead Terrace, Leeds.) Size 8 by 5 inches.

75. Douglas Head, 1885 ... Contorted slate.

Photographed by J. E. Bedford, 9, Cardigan Road, Leeds. Size 8 by 5 inches.

76. Scarlett Stack, 1888 ... Basaltic boss.
77. ,, ,, ,, ... ,, ,, (with dyke).
78. Scarlett Point ,, ... Upheaved limestone.
79. ,, ,, ,, ... Weathered volcanic ash.

LANCASHIRE.

Photographed by E. Newall (Liverpool Geological Society).

17, 18. Woolton, Liverpool... Two views of the 'Calderstones' (stone circle).

Photographed by E. Ward, 249, Oxford Street, Manchester.

Series of views of the 'Oxford Road Boulder,' now in the Quadrangle of Owens College, Manchester.
,, ,, Manchester Ship Canal.

Photographed by Godfrey Bingley (Leeds Geological Association), for the Yorkshire Naturalists' Union (Geol. Photo. Committee). Size 4 by 2¾ inches.

91, 92.	Lindale, near Grange.	1889	2)	Old sea cliffs in Carboniferous limestone.
93-97.	Hampsfell,	,,	(8)	Escarpment in limestone, showing weathering.
98-105.	,,	,,	(8)	Weathered Carboniferous limestone.
106-108.	,,	,,	(3)	Limestone boulders lying on Carboniferous limestone.
109-117.	,,	,,	(9)	Erratic boulders (various) lying on Carboniferous limestone.

NOTTINGHAMSHIRE.

Photographed by John Burton & Sons, Leicester.

Nottingham, June	1882	...	Church Cemetery; caverns in Pebble Beds.
,,	,,	,, (2)	Castle Hill, Bunter.
Himlack (or Hemlock Stone)			Showing denudation.

NOTTINGHAMSHIRE—(*continued*).

Per James Shipman, Manning Grove, Nottingham.

REG. NO.		
	Nottingham Castle... ...	Pebble Beds.
	Kimberley	Permian, resting on tilted Coal measures.
	Hemlock Stone, Nottingham	
	Nottingham	Faulted Keuper. [remains).
	Blidworth	Outliers of Keuper (supposed 'Druidical'
	Beeston	Interglacial sand and river gravel.

NORTH WALES.

Leeds Geological Association—per J. E. Bedford. (Photographed by Godfrey Bingley, 15, Cardigan Road, Leeds, for the Yorkshire Naturalists' Union (Geol. Photo. Committee). Size various.

118.	Llandudno, Gt. Orme's head	Erratic boulder. [stone.
119-121.	,, ,, ,,	Weathered blocks of Carboniferous lime-
122.	,, ,, ,,	Escarpment of Carboniferous limestone.
123.	,, ,, ,,	Section in limestone quarry.
124-128.	,, ,, ,,	Cliffs showing stratification.
129-131.	,, ,, ,,	Fissure in limestone.
132-137.	,, ,, ,,	Views of cliff sections.

YORKSHIRE.

Per Arthur S. Reid, Trinity College, Glenalmond, N.B. (Photographed by Dr. E. S. Reid.)

39, 40.	Draughton, near Skipton ...	Contorted limestone.
41.	Bolton Abbey	Faulted synclinal in limestone.

Yorkshire Geological and Polytechnic Society—per James W. Davis, Chevinedge, Halifax. Size 11 *by* 8 *inches.*

19.	Raygill Quarries, with fissures, 1875.	
20.	Plumpton Rocks, 1879 ...	
21.	Scarboro' Castle, 1883 ...	Nodular concretions in calcareous grit.
22.	Wadsley, near Sheffield, 1876	Fossil trees in Lower coal measures.
23, 24.	Flamboro' Head, 1882 ...	Erosion of chalk.
25.	,, Thornwick Bay...	Chalk surmounted by drift.
26.	Clayton, near Halifax, 1886	Roots of stigmaria.
27.	Hilderthorpe, 1887... ...	Current-bedded sands.
	Draughton, 1871	Contorted limestone. [limestone.
	Moughton Fell, 1877 ...	Junction of Silurian with Carboniferous
	Gordale Scar, 1878... ...	
	Raygill Fissure, 1880 ...	(During exploration).
	Norber, 1881	Erratic blocks.
	Bempton Cliffs, 1885 ...	Contorted chalk.

Per Yorkshire Naturalists' Union (Geol. Photo. Committee). (Photographs taken for the Leeds Geological Association, by F. W. Branson. 14, Commercial Street, Leeds.) Size 7 by 5 inches; enlarged series, 14 by 10 inches.

138.	Longley's Brick Works, Leeds	Coal measures above 'Beeston' bed.
139.	Grosvenor's Yard	'Beeston' bed (8 to 9 feet) and Coal measures.
140.	Boyle's Quarry	General Section, 'Crow coal' and Coal measures above and below.
141.	,, ,, ...	,, (detailed).
142.	Dolly Lane, Brick Yard ...	'Black bed' coal.
143.	Benson Street, Brick Yard...	'Better bed' coal, etc.

[NOTE.—These were photographed in 1885, and were temporary sections, but extremely valuable as showing the succession in the Lower coal measures from above the 'Beeston' bed to those immediately above the Elland flagstone.—S. A. ADAMSON.]

YORKSHIRE—(*continued*).

Photographed by J. E. Bedford, Cardigan Road, Leeds (for Leeds Geol. Assoc.). Size 6 by 4 inches.

Reg. No.		
144.	Armley, near Leeds, 1882...	Elland flagstones; ruptured shales and flagstones.
145.	Draughton, Skipton, 1885	Contorted limestone (anticlinal and synclinal).
146.	,, ,, 1885	Slickenside at side of an anticlinal.
147.	Bridlington, 1886	Cross-bedding in gravel.
148.	,, ,, ...	Freshwater gravel on boulder clay.
149.	,, ,, ...	Lake deposit lying on boulder clay.
150.	Filey, 1886	Drift lying upon Oolitic limestone, showing atmospheric denudation.
151.	,, ...	
152.	The Brig, Filey	Oolitic beds at the Brig.

Photographed by A. E. Nicholls, Borough Engineer's Office, Leeds (for Leeds Geological Association). Size 6 by 4 inches.

153-5.	Castleford, 1890	Three views of fossil-tree stem in situ in coal measures.
156.	Haddockstones, 1889, between Markington and Ripon	Isolated blocks of Plumpton grit.
157-158.	Sections on new railway, 1889, Ilkley to Skipton	Vertical and contorted Carboniferous limestone.
159-164.	Garforth and South Milford, 1889	Six views of quarries in Magnesian limestone, showing methods of quarrying and varieties in bedding.
165.	Knaresborough Castle, 1888	Base of Magnesian limestone, with underlying '3rd' grit.
166.	,, ,, 1888	Plumpton rocks.
167.	Dudley Hill, Bradford, 1890	Lower Carboniferous sandstone.
168, 169.	Brough, near Hull, 1889 ...	Post-tertiary gravels, resting on Oolitic outlier at base of the chalk wolds.

Photographed by Godfrey Bingley (for Leeds Geological Association), 15, Cardigan Road, Headingley, Leeds. Size various.

170-171.	Burnsal, near Skipton, 1890	Ridge of limestone crossing valley of the Wharfe.
172.	Saltburn, 1888	View of drift hills.
173.	,, ,, ...	Valley cut in drift.
174.	,, ,, ...	Sandhills and drift.
175.	,, Hunt Cliff, 1888	Middle Lias and ironstone band.
176.	Whitby Scar, 1888	Lias and Oolite.
177.	Staithes (Penny Nab) 1888	Middle Lias.
178.	,, (Colborn Nab) 1888	,,
179.	Hayburn Wyke, near Scarborough, 1887.	Sea cliff and waterfall.
187.	,, ,, ,,	Lower shale and sandstone, Oolite.
180.	Thornton Force, Ingleton, 1890.	Base of Carboniferous limestone, resting unconformably on Silurian.
181-184.	Norber, near Clapham, 1889	Erratic blocks of Silurian grit resting on Carboniferous limestone.
185.	Ewe Nab.Carnelian Bay.1887.	
186.	Scarborough Cliffs, near the Spa.	
188.	Headingley, Leeds, 1888 ...	Cliff in Lower coal measures. [(in situ).
189-190.	Adel Moor, Leeds, 1890 ...	Large weathered blocks of Millstone grit
191.	Bolton Abbey	Yoredale shales.
192.	Bolton Woods, 1888 ...	Valley of the Strid through Millstone grit.
193.	Flamborough, 1887... ...	Arch in chalk cliff.
194.	,, ,, ...	Chalk cliff.
195.	,, Thornwick Bay,	Caves in chalk.
196.	,, ,, ,,	Showing marine erosion of chalk beneath and atmospheric action denuding drift above.

OBSERVATIONS ON THE BURROWING HABITS OF CERTAIN LAND AND FRESHWATER MOLLUSCS.

W. E. COLLINGE,

Leeds; Honorary Librarian to the Conchological Society of Great Britain and Ireland.

ONE, perhaps, of the most interesting among the many peculiar habits of our Land and Freshwater Mollusca is that of burrowing. But few authors have troubled to inquire why and when molluscs burrow, so there is yet a wide field for patient and painstaking inquiry.

In the summer of 1889 and in the January of 1890 I made a few notes upon the subject, which were communicated to 'Science Gossip' in July 1890, in reply to a short paper upon the subject by Mr. Lionel E. Adams, B.A. Since then, whenever I have found either land or freshwater molluscs at any distance beneath the surface, I have carefully measured the depth, most of which will be found in the following observations.

Some authors are of opinion that, with two or three exceptions (*Testacella*, *Achatina*), molluscs burrow only when hybernating; others, led by the observations of Mr. Lowe, consider that they also burrow when enlarging their shell. Undoubtedly, a number of the smaller species burrow when hybernating, but most of the larger land species do not, but generally congregate in large numbers under the eaves of out-houses, sheltered walls, holes in rocks, etc. My observations upon the mode in which molluscs enlarge their shells do not at all agree with those of Mr. Lowe. I have bred and reared *Clausilia rugosa* and most of the commoner forms of *Helix*, but I never saw them bury any part of their shell when enlarging it, nor can I see that it would be of any advantage to the animal; on the other hand, I am inclined to think that it would seriously interfere with the action of the mantle during deposition if the head was buried in the ground as stated by Mr. Lowe, and in many cases damage the membranaceous film before the calcareous portion was deposited. It is quite possible that they may increase their shells when in holes, etc. (burrows of earthworms). The following are the species I have observed, together with such other remarks made by authors as I have thought of interest.

March 1891

Testacella haliotidea Drap. This is the only species of this genus whose habits I am cognizant with. The greatest depth I have found it at is from four to five feet. Tate mentions that they burrow from one to two feet in winter.

Testacella scutulum Sow. Mr. Quilter (Journ. of Conch., p. 320, 1888) records having found this species at a depth of eighteen inches.

Testacella maugei Fér. Dr. Jeffreys mentions that his gardener found a specimen of this species at a depth of about two feet, among celery roots.

Achatina acicula Müll. During the summer I have found this species at a depth of from four to six inches. The Rev. Henry Housman (Our Museum, p. 130) mentions the discovery of a number of human skeletons near Chichester, the bones of which were infested with this species, at a depth of about three feet below the surface. They have also been found at considerable depths in Yorkshire in Saxon coffins.

The above four species should be distinguished from the following, as they are of decidedly subterranean habits.

Limax maximus L. Mr. F. Rhodes (Science Gossip, p. 190, August 1890) found two specimens of this species under a stone weighing about two hundredweight and buried from four to six inches in the ground.

Limax arborum B.-Ch. Occasionally found in rotten beech-trees, two and three inches beneath the bark.

Arion ater L. Often met with in winter three and four inches beneath the surface.

Arion bourguignati Mab. Five specimens found with *L. maximus*.

Geomalacus maculosus Allm. 'Dr. Allman describes this slug as possessing a singular power of elongating itself so as at times to assume the appearance of a worm; by this means it can insinuate itself into apertures which we could scarcely conceive it possible for it to enter.' Rimmer states that Dr. Jeffreys informed him that some specimens he (Dr. Jeffreys) had, crawled through some holes, one-eighth of an inch in diameter, in a tin box in which they had been sent.

Hyalina cellaria Müll. I have found specimens of this shell from six to eight inches deep in both summer and winter.

Hyalina alliaria Müll. Habits similar to preceding species and found with it at about the same depth. Mr. Rhodes found two specimens with *L. maximus*.

Hyalina glabra Stud. Mr. Rhodes records two specimens with preceding species. I have met with it at a depth of about five inches, never deeper.

Hyalina nitidula Drap. I have not as yet met with this species below the surface. Rimmer states that 'it is a timid species, and often buries itself in the earth.'

Hyalina crystallina Müll. Under very heavy stones I have on many occasions in the summer met with this shell: the greatest depth the stones were imbedded was six inches.

Helix pomatia L. Most authors regard this species as only burrowing an inch or two and only when hybernating.

Helix aspersa Müll. This well-known species can hardly be said to burrow at all; during the time of depositing the eggs, they scoop out a hole two or three inches deep. I have taken young specimens in winter at a depth of four inches. The absurd properties attributed to molluscs reach their climax when such authorities as Bouchard-Chantereaux and Dr. Buckland tell us that this species scoops out by *some means or other* holes in limestone rocks, in which they hybernate. Some authors are of opinion that the rock is worn away by an acid secretion, others by the action of the shell and some by the rasping of the mandible. That they hybernate in such places I admit, but they are in no way responsible for the excavation.

Helix rufescens Penn. Frequently met with at a depth of from four to six inches and during hybernation in the hollows of decaying trees. I have on one occasion met with this species in the burrows of earthworms some six inches below the surface. It is possible that they had been dragged in by the earthworms, but hardly likely as they seldom, I believe, take in other than vegetable matter.

Helix hispida L. Found with the preceding species in burrows of earthworms.

Helix rotundata Müll. Burrows from four to five inches. Found in both summer and winter. Very often found in earthworm burrows.

Helix rupestris Drap. Generally beneath growths of moss, etc., on old walls, four and five inches in thickness.

Bulimus obscurus Müll. Occasionally taken at depths varying from four to six inches.

Pupa secale Drap. Generally with preceding species.

Pupa umbilicata Drap. Often found beneath the bark of old trees also in the ground at a depth of five or six inches.

Balea perversa L. In dry weather this species burrows to a depth of from six to eight inches; it is also found under large stones and beneath the bark of trees.

Clausilia rugosa Drap. Frequently under large stones, but I have never met with it below the surface.

Cyclostoma elegans Müll. During the summer I have met with this shell three and four inches below the surface.

Sphærium corneum L. I have collected this species in thick and sometimes hard mud at depths varying from three to fourteen inches at all seasons of the year.

Sphærium rivicola Leach. Generally buried in five or six inches of fine mud. Have met with it once in winter in hard mud four inches deep.

Sphærium lacustre Müll. Burrows to great depths; often found ten and fourteen inches below the surface in dry ponds. Have not met with it during the winter months. Dr. Jeffreys states that he 'found it alive in the hardened mud of a pond which had been drained and its bed so completely dried up by the sun as scarcely to show the marks of any footsteps on it.'

Pisidium Pfr. With the exception of *P. roseum* Scholtz, I have met with all the Pisidia at depths varying from four to twelve inches, and at various seasons of the year.

Unio Phil. The members of this genus are often covered with a layer of fine mud four to six inches thick. I have not met with any actual cases of burrowing, nor have I found them in hard mud.

Anodonta Cuvier. According to M. Drouet, the *Anodonta* usually hybernate before the close of autumn, when they bury themselves deep into the mud, remaining there until the middle of spring. Mr. Rhodes mentions that a variety of *A. cygnea* at Pudsey (Yorks.), in a disused mill reservoir, is found buried at a depth from eight to twelve inches in winter, and two to four inches in summer, but always imbedded.

Paludina contecta Müll. In Yorkshire I have found this species in the summer in thick mud quite ten inches deep; in the River Cherwell, in the north of Oxfordshire, I have brought up specimens in my net as deep as fourteen inches.

Paludina vivipara L. In fine mud, a few inches deep, I have often met with this species.

Bythinia tentaculata L. Found with *Paludina contecta* in both of the above counties and at similar depths.

Bythinia leachii Shepp. From six to eight inches on one or two occasions.

Valvata piscinalis Müll. A very inactive mollusc; although I must have dug up some hundreds, I have never found them deeper than six inches, and rarely that.

Valvata cristata Müll. With the preceding species.

Planorbis vortex L. Rimmer states that this species buries itself, but states no depth.

Planorbis corneus L. This is the only species of this genus that I have found buried at all, which I have frequently done at depths of from eight to ten inches.

Physa hypnorum L. Mr. Wm. Jeffery (Journ. of Conch., p. 305, 1882) states that this species buries itself when the ponds dry up.

Limnæa truncatula Müll. This is the only Limnæa I have any actual measurements for. I have often taken it in three or four inches of mud, and on one occasion a single live specimen eighteen inches below the surface of a dried-up pond.

NOTE—ORNITHOLOGY.

Flamborough Bird-Notes.—The poor birds are having a hard time of it this severe weather, which has brought several rare visitants to our coast. I have had brought in a Black Guillemot (*Uria grylle*) which is very rare here. Robert Leng, fisherman, informs me he had observed several pairs of the Red-breasted Merganser (*Mergus serrator*), also Goosanders (*M. merganser*). Three Swans (*Cygnus* ?) came over the Headland to-day flying southward; a great many flocks of Snow Buntings (*Plectrophanes nivalis*) and Bramblings (*Fringilla montifringilla*) are frequently seen on the Headland. Several flocks of the Common Guillemots (*Lomvia troile*) have arrived on the Coast.—MATTHEW BAILEY, Flamborough, Jan. 21st, 1891.

ERRATUM.—I hope you will correct the mistake made in 'The Naturalist' for January, p. 12. Shorelark not Stonelark.—M.B.

DISAPPEARANCE OF YORKSHIRE PLANTS.

ABRAHAM SHACKLETON,

Braithwaite, Keighley.

As I have in my possession a sort of manuscript Flora of a portion of the Parish of Keighley, compiled by a reliable botanist in the early years of the present century, I am tempted to cull from it, and offer for publication in 'The Naturalist,' the records of a few interesting plants that are now entirely exterminated in the localities

named, and some of which are not now to be found within a radius of many miles of Keighley. The habitats given are all on the W. and N.W., and within two miles of the town.

Habenaria bifolia. Grows in Sharp's pasture on the road to Keighley. July 10, 1811.

Gymnadenia conopsea. Meadows. Sometimes grows with *O. maculata*. July 12, 1810.

Listera cordata. Grows in the swamp about 200 yards N. E. of the Tarn Gate. It is past flowering. July 6, 1811. In Blakey's Allotment, amongst the trees, pretty plentifully. It is just beginning to flower. May 18, 1813.

Anagallis tenella. Grows in T. Moorhouse's lowermost wood. Flowers nearly white. Aug. 29, 1816.

Conium maculatum. Grows on the roadside, near Blackhill. Aug. 4, 1810.

Parnassia palustris. In T. Moorhouse's Wet Hill. Sep. 6, 1814.

Narthecium ossifragum. Grows plentifully in the Tarn Allotment. July 24, 1800.

Vaccinium oxycoccus. Common. Sep. 7, 1816.

Primula farinosa. Grows in Midgley's Wet Hill. Flowers light pink. May 25, 1805. (Has this species ever been recorded further south in Yorkshire?)

Pyrola media? Grows in the Long Wood, about midway down. August 1838. (About the year 1855 the present writer saw three or four plants in bloom at this station, but has not seen any since, though repeatedly searched for).

Lythrum salicaria. Grows in Walker's Bank Lane and Middlebrook's Ing. September 1812.

Orobanche major. Grows near the Beck, below Laycock. May 16, 1837.

The disappearance of the above-named plants I attribute to drainage and better cultivation of the land.

The compiler of the Flora also collected various specimens of lichens growing in the district, many of which are no longer to be found there, and some survive in a depauperate condition. One—*Pertusaria leioplaca*—has never, I believe, been recorded for the West Riding. I have three specimens of this plant from three different stations near Keighley: but it is now, I fear, extinct.

I attribute the disappearance of lichens to the ever-increasing smoke-density of the Airedale atmosphere.

VERTEBRATES OF THE WESTERN AINSTY.

EDGAR R. WAITE, F.L.S.,

Sub-Curator of the Leeds Museum, and one of the Honorary Secretaries of the Yorkshire Naturalists' Union.

Professor NEWTON writes:—'The good effects of "Faunal" works such as those named in the foregoing rapid survey none can doubt. "Every kingdom, every province, should have its own monographer," wrote Gilbert White, more than one hundred years ago, and experience has proved the truth of his assertion.'

(Encl. Brit., 9th Edition, vol. xviii. p. 18.)

'THE liberty of the honour of the Ainsty of the County of the City of York' consists of the country lying between the Nidd and the Wharfe, bounded on the east by the Ouse, and on the west by a line drawn from the Nidd at Cattal Lodge to a point on the Wharfe about a mile East of Wetherby.

A line drawn due north and south from Wilstrop to Tadcaster cuts off a Western half, which is practically the area embraced by the present paper.

The district includes Ingmanthorpe, Walton, Thorp Arch, Wighill, Tadcaster, Healaugh, Bilton, Bickerton, Tockwith, Marston Moor, and Wilstrop. Observations made near Cowthorpe, North and Kirk Deighton, Wetherby, Boston Spa, and Newton Kyme (all of which lie just beyond the Ainsty boundaries) are, however, included.

Geologically speaking, the district is divisible by a diagonal line (running from Cowthorpe through Wighill to Tadcaster) into two distinct areas, that lying to the north-east of this diagonal consisting of the Triassic rocks and overlying alluvial deposits of the Vale of York, and that lying to the south-west including the Magnesian Limestones and Marls of the Permian series.

Physically, the district is flat and somewhat low-lying, it averages about 80 feet above the sea-level, and the elevations are few and inconsiderable. Some idea of the general low-lying nature of the Ainsty may be gathered from the fact that the two rivers which form its eastern and southern boundaries are tidal for a portion of their course through the district. The tidal influence extends as high as Naburn on the Ouse, and as far as Tadcaster on the Wharfe.

The district forms part of the drainage areas of the Nidd and the Wharfe, and a line drawn from the Wharfe at Wetherby will touch the Nidd at Walshford Bridge, a distance of only four miles.

Both rivers, and particularly the Wharfe, are subject to rapid floods. The Wharfe has been known to rise three feet in an hour:

this is in consequence of its large drainage area in the North-Western fells, and at such times it overflows its banks at Thorp Arch and Wighill Ings, covering a considerable area. The low-lying land about Wilstrop is subject to similar inundations from the Nidd.

The country is extremely well-wooded, and without a trace of moorland, properly so called.

The Mammalia are well represented, but the points which call for remark are of negative rather than of positive interest. The mammals of a district are always somewhat difficult to work out, but having had practical acquaintance with the 'Western Ainsty' for several years, I believe that the following list is not far from being complete. It is quite possible, however, that other species of Bats may turn up, as I am able to add one—Natterer's Bat—by the merest accident. The Whiskered Bat (*Vespertilio mystacinus*) I have never seen in the district, although it is tolerably common in some other localities. I have had small traps set in many places, and although I have caught most of the smaller mammals, I have never come across either the Red Field Vole or the Harvest Mouse. The latter is, however, recorded for Wetherby. The Badger is still found at Bramham on the south side of the Wharfe, but it has never, so far as I know, occurred within the district here treated of. There are no Deer in the locality now, but Fallow Deer were formerly kept at Healaugh Hall near Tadcaster.

Ornithologically, the district is interesting on account of the number of rare birds which have occurred within its borders. Among these may be specially mentioned the Orphean Warbler, Golden Oriole, Scops Owl, Golden Eagle, Lesser Kestrel, Cream-coloured Courser, and Wedge-tailed Gull. One bird—the Yellowshank—formerly included, is now removed from the Yorkshire list. Attention may be called to the breeding of the Quail, and to the fact that formerly the Bittern occurred and the Ruff bred regularly in the district. The entire absence of moorland renders such birds as the Ring Ouzel, Grouse, and Curlew of exceptional occurrence, while the abundance of wood and undergrowth attracts many warblers and other tree-loving birds. During winter, when the low-lying land previously mentioned is flooded, many Ducks frequent the water, and, as will be seen, several of the rarer species have occasionally been met with.

With regard to local names of birds, I have mentioned those only which are peculiar to the district, or at any rate are not in general use. Many of the so-called local names are merely alternatives, for example, 'Throstle' for Song Thrush, 'Titlark' for Meadow Pipit.

Respecting the Reptiles and Amphibians, the only matter which calls for remark is in connection with the Viper. I am not at all satisfied that it occurs in the district, although I know that it has certainly been taken south of the Wharfe.

The Pisci-fauna of the Nidd and the Wharfe are very similar, and what differences exist may be attributed to the distinctive character of the two streams. Being somewhat sluggish, the coarser fish predominate in the Nidd. The reverse is the case in the Wharfe, no doubt due to the fact that it is a much clearer and faster-flowing river.

It is worthy of remark that formerly the Wharfe, between Harewood and Tadcaster, was very rich in Trout, but of late years this fish has diminished in numbers and given place to the Grayling. So that now the Wharfe within the district must be regarded as a Grayling rather than as a Trout stream.

MAMMALS.

Plecotus auritus (Linn.). **Long-eared Bat.** Not uncommon in the district; it occurs at Wilstrop and Thorp Arch and is frequently found by the workmen when pulling down old cottages and farm buildings. Examples have also been obtained at Wetherby.

Vesperugo noctula (Schreb.). **Noctule. Great Bat.** Fairly common, far more so than *P. auritus* and especially so at Thorp Arch where it frequents the crevices in the Magnesian limestone rock known as Jackdaw Crag on the south side of the Wharfe. It has also been observed at Tadcaster and Boston Spa. This bat usually flies very high.

I have several times kept this as well as other species of bats in captivity and have noticed a peculiarity which I have not seen described in print. When the Noctule goes to sleep the ear is thrown forward, the front edge then covers the eye and at the same time the aural aperture becomes enlarged.

Vesperugo pipistrellus (Schreb.). **Pipistrelle. Common Bat.** This species is extremely abundant and generally distributed throughout the district. On a fine summer's evening they may be seen flying by scores over the Wharfe. They frequent most of the church towers in the district, but the principal colonies are to be found at Jackdaw Crag.

I have found the Pipistrelle feeding very largely upon the Ghost Swift Moth (*Hepialus humuli*) from which it clips the wings. I have also noticed it taking the Magpie Moth (*Abraxas grossulariata*) and the Swallow-tailed Moth (*Urapteryx sambucata*), all of which are common in the district.

Vespertilio nattereri Kuhl. **Reddish-grey Bat. Natterer's Bat.** I have met with only one example of this species in the district. I found it lying dead on the road near to Thorp Arch on the 11th July, 1890 (recorded in 'The Naturalist,' 1890, page 255). It seems improbable that this should be the only specimen of the district, but all the small bats which I have hitherto shot have been the common species (*V. pipistrellus*).

Erinaceus europæus Linn. **Hedgehog.** Very common and generally distributed throughout the district, and is usually found in hedgerows and thickets.

Talpa europæa Linn. **Mole.** Very common in all parts of the district, being generally confined to cultivated land and pastures. The systematic trapping which is carried on does not appear to lessen its numbers: if, however, the trapping on an estate is suspended for a single season, the enormous increase in numbers becomes very apparent the following year.

Sorex tetragonurus Herman. **Common Shrew.** Very common, and generally distributed throughout the district; both this and the following species have been frequently caught but are not eaten by the cat.

Sorex minutus Linn. **Lesser Shrew.** Common in several parts of the district, but rare in others; nowhere so plentiful as *S. tetragonurus*. It appears to spend less time outside its burrow.

Crossopus fodiens (Pallas). **Water Shrew. Black Shrew.** The Water Shrew is certainly scarce in the district; it occurs at Wilstrop, and I have also seen it on the Foss (a small tributary of the Wharfe) near to Wighill Park. Mr. John Emmet records it from Boggard House, Walton, and the Rev. J. W. Chaloner, of Newton Kyme, tells me that his cat took him a small animal, which he did not know. From the description which he has given me I have no hesitation in saying it was a Water Shrew.

Canis vulpes Linn. **Fox.** Common throughout the district. It is bred at Walton, Thorp Arch, and other places, and rigorously preserved for the purposes of the Bramham Moor Hunt. During the season some part or other of the district is regularly hunted. In 1862 Mr. George Lane Fox, writing to the 'Field,' stated that foxes were more abundant within the limits of his hunt (except about Selby) than in any other part of Yorkshire.

Mustela vulgaris Erxl. **Common Weasel.** Very common and generally distributed throughout the district, although largely trapped as vermin by the keepers. It is generally seen about walls and stone-heaps. This species is subject to much variation

both in size and colour; females are occasionally obtained of very small size, with darker breasts, which accounts for the keepers maintaining that there are two distinct kinds, the smaller of which they call the 'Mouse Weasel.'

Mustela erminea Linn. **Stoat. Ermine.** Locally called Foumart; also Clubster. Common, but less so than formerly, no doubt owing to the persistent persecution by the keepers; it is, however, more plentiful in some places than in others. Creamy examples are occasionally obtained in winter. It frequents the bottom of hedgerows, and the keepers tell me that it sometimes travels for a long distance. A white and easily recognisable example was shot three miles from the spot where it was first seen.

Mustela putoria Linn. **Polecat. Foumart.** The name Foumart is usually used in the district in connection with *M. erminea*. It has been shot at Ingmanthorpe, and Mr. Harrison tells me that two or three were caught at the bottom of a haystack at Red House near Wilstrop in 1886. These are the only records I have of it for the district.

Lutra vulgaris Erxl. **Otter.** It occurs on the Nidd (Mr. Harrison has trapped seven at Wilstrop), but more commonly on the Wharfe, where it is comparatively undisturbed. At one spot near Thorp Arch they may be sometimes seen during the evening. The two rivers are occasionally though rarely hunted by packs of Otter-hounds but not always successfully. On two occasions, in 1874 and 1878, they both afforded good sport. Like the seals, the Otter usually sinks when shot, but a young one killed at Thorp Arch by Mr. W. Bland, Mrs. Hatfeild's keeper, remained at the surface.

Meles taxus (Schreb.). **Badger.** I am told that the Badger still occurs at Bramham south of the Wharfe. It formerly inhabited the Lime Kiln Wood at Woodhall near Wetherby, and the Rev. J. W. Chaloner tells me that it was there as late as 1846; he saw one at Towton about that date. These are, however, the only records I have of it for the neighbourhood.

Cervus dama Linn. **Fallow Deer.** A small herd was formerly kept at Healaugh Hall near Tadcaster, the seat of the Brooksbanks.

Sciurus vulgaris Linn. **Squirrel.** Very abundant in all the larger woods throughout the district. I know of no place where it is so common as at Thorp Arch. Some of the woodmen accuse it of eating the growing shoots of young trees, and destroy it accordingly.

Muscardinus avellanarius (Linn.). **Dormouse.** Rare. Mr. Harrison tells me that it occurs very sparingly at Wilstrop. I have met with it near to Wetherby and at Bilton, and once at Thorp Arch. I have never caught this species in the traps which I have set for the smaller mammals.

Mus minutus Pall. **Harvest Mouse.** The late W. J. Milligan, of Wetherby, wrote of this species:—'Not by any means rare in late summer and autumn.' I am, however, inclined to think that some other species is referred to, as I have never found the Harvest Mouse in any part of the district nor have I met anyone who has.

Mus sylvaticus Linn. **Common Field Mouse. Long-tailed Field Mouse.** Abundant and generally distributed throughout the district.

Mus musculus Linn. **House Mouse.** Very abundant in all parts of the district. It appears to frequent corn-stacks rather than houses, and I often find them in hedges among the branches. I once found the nest of a Hedge Accentor full of haws and a Mouse comfortably ensconced among them.

Mus decumanus Pall. **Brown Rat.** Common throughout the district. Frequents corn-stacks in company with *M. musculus*, occupying the lower part, while its smaller relative is generally found in the upper part. When the stacks are threshed, both species migrate to the houses in the immediate neighbourhood.

Arvicola amphibia (Linn.). **Water Vole.** Called here, as elsewhere, Water Rat. Plentiful at every ditch, pond, and beck in the district, and also along the banks of the Wharfe and the Nidd. I have frequently seen them swim across the river.

Arvicola agrestis DeSelys. **Common Field Vole.** Very common in all parts of the district; plentiful in pastures and meadows, more especially those which are low-lying.

Lepus timidus Linn. **Common Hare.** Very common in cultivated tracts and pastures. A few years ago this animal was comparatively scarce in the district, but, by strict preservation, it has increased to a truly remarkable extent.

Lepus cuniculus Linn. **Rabbit.** Common throughout the district, and exceedingly numerous in some places, especially at Wighill Park, where it simply swarms. Both black and silver-grey varieties are not uncommon: these have, however, been introduced. It is to be supposed that it was in the district previous to 1540, as a rabbit warren at Bramham Bigging is mentioned in a legal document of that year's date as belonging to the Priory at Nostell.

BIRDS.

Turdus viscivorus Linn. **Missel Thrush.** Resident. In winter this species is generally classed with *T. iliacus* and *T. pilaris*, under the common term 'Felfer'; when spoken of separately it is known as the 'Stormcock.' It is fairly numerous, and a large immigration takes place in autumn; the numbers are, however, again reduced in early winter. Usually very wild and retiring, but bold and pugnacious during the breeding season. It breeds in all parts of the district, and for this purpose frequents small plantations in the vicinity of houses rather than the deeper woods.

Turdus musicus Linn. **Song Thrush.** Resident; very abundant. In September a large immigration takes place; the visitors, however, move further south at the approach of winter. It suffers much in severe seasons, and in the winter of 1885-6, when many were to be found dead beneath the hedges, the numbers were so thinned that it was several years before they regained their former abundance. This species breeds commonly throughout the district, and is free from the persecution to which *T. merula* is subject.

I have ascertained that, at any rate, some of the birds which breed in the district, remain there throughout the year.

Turdus iliacus Linn. **Redwing.** Local name, Redwing-Felfer. Winter visitant, very abundant, especially during severe weather. Associates in large flocks with *T. pilaris*, and feeds principally on the ground.

I have opened a large number of these birds, and have generally found the food to consist of worms, slugs, and other animal matter; this is very probably the reason that when a severe continued frost prevails, the Redwings are the first 'Thrushes' to succumb.

Turdus pilaris Linn. **Fieldfare.** Local name, Bluetail. A regular winter visitant, arriving in October, and generally departing in April. It sometimes appears in large flocks, but is never so numerous as *T. iliacus*, and is usually much wilder. It feeds largely upon the berries of the hawthorn and wild rose, and the ground beneath the hedges is often covered with their droppings, which are almost the colour of the fruit that they have eaten. Unlike Redwings, which roost in trees and bushes, Fieldfares sleep on the ground, from which they may be disturbed by hundreds during the night. They appear to frequent certain places to which all the birds in the immediate neighbourhood resort.

Turdus merula Linn. **Blackbird.** Resident and common. It breeds regularly throughout the district, but is much persecuted by the farmers on account of its fruit-eating propensities.

Turdus torquatus Linn. **Ring Ouzel.** Decidedly rare; when seen, it is only during the spring and autumn migration. The Rev. J. W. Chaloner tells me that he has only seen this bird once at Newton Kyme. Mr. John Harrison has met with it on two occasions at Wilstrop.

Saxicola œnanthe (Linn.). **Wheatear.** A regular visitant in small numbers during the spring and autumn migration, when it is seen only for a short time, generally about walls and stone heaps.

Pratincola rubetra (Linn.). **Whinchat.** A regular summer visitant. It is common, and breeds throughout the district wherever whins are to be found.

Pratincola rubicola (Linn.). **Stonechat.** Rare, a few have been seen from time to time in different parts of the district, generally in spring, but Mr. Wm. Eagle Clarke saw a pair at Linton, near Wetherby, on October 10th, 1886.

Ruticilla phœnicurus (Linn.). **Redstart.** Locally known as 'Wrenny Red-tail.' A summer visitant, fairly common, breeds regularly in the district, but is somewhat local in this respect.

Erithacus rubecula (Linn.). **Redbreast.** Resident: partially migratory, very common in the district, throughout which it breeds regularly.

Daulias luscinia (Linn.). **Nightingale.** The following are the only records which I have of this species:—One at Stockeld Park, near Wetherby. In 1846 one was seen at Wetherby Grange by the Rev. J. W. Chaloner, who tells me that there have been two occurrences at Newton Kyme—one in 1866 and another in 1886. In 1880 Mr. John Emmet wrote:—'I am told that a pair built at the Vicarage, Thorp Arch, some years since, but the nest was taken.' Mr. John Harrison writes:—'A pair frequented Wilstrop for two years in succession, 1860 and 1861, but the nest was not found.'

Sylvia cinerea Bechst. **Whitethroat.** Commonly called, as elsewhere, Peggy Whitethroat. Summer visitant, and very common, breeding in all suitable places throughout the district, frequently among nettles.

Sylvia curruca (Linn.). **Lesser Whitethroat.** A regular summer visitant, but not nearly so common as *S. cinerea*; breeds in many places in the district, usually much earlier than the Whitethroat.

Sylvia orphea Temm. **Orphean Warbler.** The late Sir Wm. M. E. Milner records the fact that a pair were seen in a small plantation near Wetherby on the 6th July, 1848. The female was shot and stuffed by Graham of York (Milner, Zoologist, 1849, p. 2588). The bird is now in the 'Milner Collection' at the Leeds Museum.

Sylvia atricapilla (Linn.). **Blackcap.** Summer visitant, regular, but not common; breeds at Wilstrop and Healaugh. 'Blackcap' is the name commonly applied to *Parus major*, and writers of MSS. state that the Blackcap is very common in their district. These remarks are, however, distinctly applicable to the Great Tit.

Sylvia hortensis Bechst. **Garden Warbler.** A regular summer visitant, and fairly common; perhaps especially so at Wetherby. Breeds in several places in the district.

Regulus cristatus Koch. **Goldcrest.** Resident, fairly common, and generally distributed throughout the district. It breeds regularly at Wilstrop and Wetherby, and occasionally in other places where there are fir plantations.

Regulus ignicapillus (Brehm). **Firecrest.** One was caught at Whixley, just outside the district, on December 3rd, 1849. 'The markings at the side of the head as well as the feathers forming the crest (which in the present example are of an intense flame colour) sufficiently distinguish the species.' (Garth, Zoologist, 1850, p. 2699).

Phylloscopus rufus (Bechst.). **Chiffchaff.** A regular summer visitant, but local; common where it occurs. Breeds in several localities in the district.

Phylloscopus trochilus (Linn.). **Willow Warbler.** Summer visitant, regular, and exceedingly common. Breeds in all parts of the district.

Phylloscopus sibilatrix (Bechst.). **Wood Warbler.** An irregular summer visitant and somewhat rare. I have seen it at Wetherby, it nests at Ingmanthorpe, and Mr. John Harrison has found the nest at Wilstrop.

Acrocephalus streperus (Vieill.). **Reed Warbler.** An irregular summer visitant, and rare. I have seen it at some old tan-ponds full of bullrushes, near to Walton, throughout the summer, and feel certain that it breeds there, but have never succeeded in finding the nest. Mr. F. Stevens found the nest at Wetherby, and possesses two eggs which he took from it.

Acrocephalus phragmitis (Bechst.). **Sedge Warbler.** Local name, Willow Chit. A regular summer visitant and exceedingly

common, perhaps more so than any other Warbler; breeds in all suitable localities throughout the district.

Locustella nævia (Bodd.). **Grasshopper Warbler.** Regular summer visitant and not uncommon, but local. It is fairly numerous at Cowthorpe and Wilstrop, where it breeds; it also occurs at Wetherby, but is scarcer towards the east. I have not found it in the immediate neighbourhood south of the Wharfe.

Accentor modularis (Linn.). **Hedge Accentor.** Cuddy is the name by which it is usually designated. Resident, and as common in the Ainsty as elsewhere. It breeds in all parts of the district.

Cinclus aquaticus Bechst. **Dipper.** Resident; common on the Wharfe; it breeds regularly at Wetherby and Thorp Arch. The Nidd within the district is too sluggish for it, and it is seldom seen below Knaresborough. Mr. Harrison has met with it only once on the latter river—at Skip Bridge.

Acredula rosea (Blyth). **Long-tailed Tit.** Resident and fairly common in all the larger woods within the district. It is a very gregarious species and breeds regularly at Wilstrop, Ingmanthorpe, and Thorp Arch.

Parus major Linn. **Great Tit.** Local name, Blackcap (see *Sylvia atricapilla*) and Billy Jinker. Resident and common; it appears to be increasing in numbers, and breeds regularly throughout the district.

Parus britannicus Sharpe & Dresser. **Coal Tit.** Resident; fairly common, but somewhat local; being partial to fir plantations, it breeds in most suitable parts of the district.

Parus palustris Linn. **Marsh Tit.** Resident and uncommon; the rarest Tit of the district, throughout which, however, it occurs in very small numbers. The term 'Marsh' does not appear to have any special reference to this bird, for it inhabits precisely the same localities as other Tits, and is frequently seen in their company.

Parus cæruleus Linn. **Blue Tit.** Local names, Blue-cap and Billy-biter. Resident and very abundant; the commonest Tit of the district, throughout which it breeds.

Sitta cæsia Wolf. **Nuthatch.** Decidedly rare. I have met with it once in Walton Wood, and the Rev. J. W. Chaloner has seen it twice at Newton Kyme. Mr. J. Harrison tells me that it has occurred in Wilstrop Wood, and the late John Tennant wrote (MS., 1880):—'It breeds at Allerton Park', a short distance outside the district.

Troglodytes parvulus Koch. **Wren.** Locally known as Tom Tit. Resident and tolerably common; breeds in all parts of the district. Mr. J. R. Hatfeild was bottom fishing in the Wharfe a short while ago, and had just drawn the worm out of the water when it was seized by a Wren, which held on to it for two or three seconds, and then flew away.

Certhia familiaris Linn. **Tree Creeper.** Local name, Little Woodpecker. Resident and not very common: breeds in several parts of the district, chiefly in the older woods.

Motacilla lugubris Temm. **Pied Wagtail.** Resident and fairly common, and breeds regularly. In Autumn the greater number leave the district, but appear again in March.

Motacilla melanope Pall. **Grey Wagtail.** Resident, but not very numerous. It is, however, more common in Winter. It occasionally breeds on the Wharfe, above Tadcaster, and did so in 1877, also last year (1890); breeds at Hunsingore, on the Nidd.

Motacilla raii Bonap. **Yellow Wagtail.** An irregular summer visitant in varying numbers. I am told that it has bred at Wetherby. I have never found it doing so in the Ainsty district.

Anthus trivialis (Linn.). **Tree Pipit.** Local name, Tree Lark. A regular summer visitant, very common and generally distributed throughout the district, breeding in all parts. It appears to be more numerous than *A. pratensis*.

Anthus pratensis (Linn.). **Meadow Pipit.** Resident: very common in summer but much less so in winter, it breeds regularly in all parts of the district, but more numerously in moist meadows.

Oriolus galbula Linn. **Golden Oriole.** The Rev. J. W. Chaloner tells me that one of these birds was seen on the 28th April, 1870, at Grimston Park near Tadcaster, by the keeper (see also 'Yorkshire Vertebrata,' page 27).

Lanius excubitor Linn. **Great Grey Shrike.** Mr. John Harrison informs me that he saw one at Wilstrop during the winter of 1876-7. One has been shot near Wetherby.

Ampelis garrulus Linn. **Waxwing.** A rare winter visitant. It has only been seen in the district during severe seasons. Several were seen at Farnham near Wetherby on Jan. 5th, 1870. One was shot by Mr. Wright at Tockwith.

Muscicapa grisola Linn. **Spotted Flycatcher.** Summer visitant, common; breeds regularly in many parts of the district, being generally found in orchards.

I have frequently found the young birds to leave the nest when they are scarcely able to fly; they sit at the roots of the trees and are difficult to find owing to their grey colour, which assimilates well with the bark.

Muscicapa atricapilla Linn. **Pied Flycatcher.** This bird has been seen in the district at Wilstrop by Mr. John Harrison and at Collingham by the Rev. J. W. Chaloner. Mr. F. Stevens found a nest at Wetherby in 1889.

Hirundo rustica Linn. **Swallow.** A regular summer visitant, abundant; it breeds throughout the district wherever suitable nesting sites exist. I have described some nests built at Wilstrop in 'The Naturalist,' 1890, page 258.

Chelidon urbica (Linn.). **Martin.** Summer visitant, regular and common, but much less so in some places than formerly; being driven out of its nests by the House Sparrows, which are increasing in numbers. The Martin has entirely deserted some localities where it formerly bred, but at Wilstrop, where the Sparrows are kept in check, it is plentiful and I have counted as many as twenty-two occupied nests under the eaves of one shed.

Cotile riparia (Linn.). **Sand Martin.** A regular summer visitant, abundant where it occurs, breeds in colonies in many places in the banks of the Wharfe and Nidd and also in several sand-pits.

Ligurinus chloris (Linn.). **Greenfinch.** Resident and abundant, it breeds generally throughout the district.

Coccothraustes vulgaris Pall. **Hawfinch.** From all accounts it appears that the Hawfinch is increasing in numbers in many parts of the country, and the Western Ainsty is no exception; it was formerly a rare bird but can hardly be considered so now. I have seen it at several places in the district at different times of the year and obtained one at Wilstrop on 8th Feb., 1890. Mr. John Emmet records it at Healaugh on May 11th, 1883 ('Naturalist,' 1885, p. 299), and he found it nesting at Boston Spa in 1886 ('Naturalist,' 1886, p. 277).

Carduelis elegans Steph. **Goldfinch.** Locally called Redcap. Formerly common, but rare now, for which I believe the bird-catchers are mainly responsible. In a MS. dated 1880, the late W. J. Milligan, of Wetherby, wrote of this species:—'It is not numerous, and is oftener seen in autumn and winter; a favourite locality is about Wighill and Newton Kyme, but it is continually shifting its quarters.' The late John Tennant wrote in 1880:—'It has bred at Wilstrop, but is very rare now.'

It still occurs at Wetherby, and breeds at Boston Spa. My father tells me that many years ago Oglethorpe Whin Covert used to be a favourite haunt of Goldfinches, whence the birds visited a spring at Boston Spa, a mile distant.

Chrysomitris spinus (Linn.). **Siskin.** An irregular winter visitant; when it occurs, it is generally during severe weather, usually in small, but sometimes in larger numbers, as, for example last winter: I saw some near Boston Spa on Jan. 4th. They generally frequent the alder trees.

Passer domesticus (Linn.). **House Sparrow.** Resident and extremely abundant. The persistent persecution by the farmers does not, on the whole, appear to lessen its numbers; it is, however, kept well within bounds at Wilstrop Hall by Mr. Harrison. Breeds in all parts of the district where human habitations exist (see *Chelidon urbica*).

Passer montanus (Linn.). **Tree Sparrow.** Resident, but local; common where it occurs, as at Walton, Thorp Arch, and Wilstrop. Mr. James Backhouse has a note in 'The Naturalist,' 1890, p. 355, on this species at Wilstrop, and I may add that it occasionally breeds there in low thick bushes. I have never known two broods to be reared in a season, nor have I found *P. montanus* interpairing with *P. domesticus*.

Fringilla cœlebs Linn. **Chaffinch.** Usually called Bullspink, or simply Spink, in the district. Resident, and, next to *P. domesticus*, the most abundant Finch. It is passionately fond of radish-seed, and unless prevented, will assemble in shoals where it is sown and soon do considerable damage. I have not noticed that any separation of the sexes takes place in autumn or winter, as recorded by writers in other districts.

Fringilla montifringilla Linn. **Brambling.** Better known in the district by its second trivial name of Mountain Finch; a regular winter visitant, very common in severe seasons, when it associates with flocks of Chaffinches and Greenfinches. It was especially numerous last winter (1890).

Linota cannabina (Linn.). **Linnet.** Resident and very common where it occurs; breeds regularly in those parts of the district where *Pratincola rubetra* is to be met with. It is usually seen in small flocks in the autumn.

Linota rufescens (Vieill.). **Lesser Redpoll.** Locally called Chevy-linnet. Resident: not very common, but somewhat variable in this respect, in some places being fairly numerous, while in others it is seldom seen; it breeds in the district.

Linota flavirostris (Linn.). **Twite.** Mr. Harrison tells me that it has occurred at Wilstrop in winter. I have never seen it in the district.

Pyrrhula europæa Vieill. **Bullfinch.** Resident, and fairly common: might be much more so but for the bird-catchers, who take both sexes indiscriminately in the winter. It breeds sparingly in all parts of the district, more commonly where young fir trees are planted.

Loxia curvirostra Linn. **Common Crossbill.** I have only one occurrence to record for the district, and that a very recent one. Mr. F. Stevens, of Wetherby, writes to me:—'On the 1st January last (1891), during the severe weather, I obtained a Crossbill here alive, but let it go again.' In a subsequent letter, replying to one from me, he says the Crossbill was in a very exhausted condition, and he gives a description of the bird such as to leave no doubt in my mind as to its identity.

Emberiza miliaria Linn. **Corn Bunting.** Locally known by the name of Chub-lark. Resident, and common on cultivated land; appears to be increasing in numbers. It breeds in all suitable localities throughout the district.

Emberiza citrinella Linn. **Yellow Bunting.** Local names, Goldie, Youldie, and Youldring. Resident, and very common in all parts of the district, breeding generally throughout.

Emberiza cirlus Linn. **Cirl Bunting.** Mr. John Harrison has met with a single example at Wilstrop, and the Rev. J. W. Chaloner has seen the bird on one or two occasions at Newton Kyme.

Emberiza schœniclus Linn. **Reed Bunting.** Resident; but not very common. It occurs on the more swampy ground, but is decreasing in numbers, no doubt owing to more extensive drainage. It breeds annually on the Racecourse at Wetherby, at Wilstrop, and occasionally near Walton and at Newton Kyme.

Plectrophanes nivalis (Linn.). **Snow Bunting.** An irregular winter visitant; occurs during very severe and prolonged cold weather. I saw more last winter, 1890-1891, than I have ever seen before in the district. Mr. J. R. Hatfeild shot one.

Sturnus vulgaris Linn. **Starling.** Resident and abundant; it has increased very much of late years, and breeds throughout the district wherever it can find suitable nesting-sites. At Walton I have seen upwards of two hundred Starlings' eggs taken from a pigeon-house at one collection. Mr. John Harrison (one of the few farmers who recognise the worth of this bird) has built

for them suitable nesting-places in the farm-buildings at Wilstrop, where 250 pairs breed annually. In autumn these birds feed very largely on elder-berries, and at this season their droppings have quite a purple colour, resembling those of Grouse when feeding on blueberries.

Pastor roseus (Linn.). **Rose-coloured Starling.** In a MS. dated 1880, the late John Tennant wrote: 'My father saw one at Wetherby, which was shot there, some twenty-five years ago.'

Garrulus glandarius (Linn.). **Jay.** Resident, but far from common, accounted for by the fact that it is regarded as 'vermin' by the keepers; its extermination in the district is but the question of a few years; it, however, still occurs in all the larger woods, and is not uncommon at Newton Kyme, where it breeds regularly.

Pica rustica (Scop.). **Magpie.** Resident, and fairly common throughout the district, in spite of persistent persecution. The usual practice of the gamekeepers in spring is to shoot the old birds and then fire through the nest, and so kill the young ones or destroy the eggs. It is very gregarious, and I have seen twenty-eight feeding together at an offal heap. It breeds regularly in most of the woods and plantations.

Corvus monedula Linn. **Jackdaw.** Resident, very numerous, being one of the only two common members of the British Corvidæ not usually found on the keeper's 'poles.' It nests in most of the old church-towers in the district, but the chief breeding-place is in the holes in the Magnesian Limestone cliff on the south side of the Wharfe at Thorp Arch, named after the bird, 'The Jackdaw Crag.' They not infrequently nest in rabbit-holes in the bank of the river. Scores of Jackdaws sometimes associate with the Rooks when these birds are performing their aerial gyrations.

Corvus corax Linn. **Raven.** Mr. Harrison has seen a few examples in the district during the past forty years. He trapped one in the spring of 1865, and kept it alive for five or six years. The last one seen in the neighbourhood was at Wilstrop in 1870. The late John Tennant wrote: 'They formerly bred at Allerton Park' (MS. 1880).

Corvus corone Linn. **Carrion Crow.** Resident: not uncommon, it holds its own in spite of gun and trap, and breeds regularly in the more secluded woods throughout the district.

Corvus cornix Linn. **Hooded Crow.** A regular winter visitant in small numbers, usually more common during severe seasons.

I saw fewer during the early part of last winter 1890-91, although an exceptionally severe one, than I ever remember having seen before; this I attribute to the very mild weather which prevailed in the North of Europe.

Corvus frugilegus Linn. **Rook.** Resident and common, the second species about which the gamekeeper does not trouble; it occasionally suffers a little at the hands of the farmers. Breeds in colonies in many parts of the district.

Alauda arvensis Linn. **Skylark.** Resident, abundant and generally distributed; it is largely snared by the bird-catchers, and breeds in all parts of the district.

Cypselus apus Linn. **Swift.** Locally known as Devil-screamer, a common summer visitant, breeds regularly in large numbers in all the railway sheds on the Wetherby line within the district, also in Wetherby Bridge and Walshford Bridge and in most of the church towers.

Caprimulgus europæus Linn. **Nightjar. Goatsucker.** A summer visitant but not very common, and quite local; Mr. Harrison has only twice found it breeding at Wilstrop (which is perhaps the most suitable locality in the district) during the last forty years. It has also occurred at Newton Kyme.

Iynx torquilla Linn. **Wryneck.** The only record I have of this species in the district is that Mr. Chaloner saw one at Newton Kyme in 1889 (MS.).

Dendrocopus major (Linn.). **Great Spotted Woodpecker.** Resident and fairly numerous, the commonest Woodpecker of the district. It breeds regularly in all the deeply-wooded parts, e.g., Walton, Wilstrop, Ingmanthorpe, Newton Kyme, Thorp Arch, etc.

Dendrocopus minor (Linn.). **Lesser Spotted Woodpecker.** (See *Certhia familiaris*). According to the Rev. J. W. Chaloner this species has occurred at Newton Kyme (MS.), and Mr. F. Stevens tells me that he has seen it on one occasion at Wetherby.

Gecinus viridis (Linn.). **Green Woodpecker.** The keepers and woodmen call this bird the Golden Woodpecker. Resident, but far from common; it occurs sparingly in all the larger woods, but the only place in the district where it breeds regularly is at Healaugh. A pair bred at Wetherby in 1887. This bird is a much better flyer than it usually gets credit for: I once startled one out of a small coppice and it flew in an almost straight line until it appeared a mere speck, and finally I could see it no longer.

Alcedo ispida Linn. **Kingfisher.** Resident, and by no means uncommon in suitable places in the district; I am glad to be able to say that it is certainly increasing in numbers and breeds regularly, not only in the banks of the Wharfe and Nidd but also on several ponds especially those which are protected by overhanging brushwood.

Upupa epops Linn. **Hoopoe.** A male was shot by Mr. Ripley in Cowthorpe Woods, near Tockwith, in June, 1877. He fired at a rabbit, and on going to pick it up, found that he had shot the Hoopoe also (Wesley, Zool., July 1877, p. 298).

Cuculus canorus Linn. **Cuckoo.** A regular summer visitant; common throughout all parts of the district. I once saw a Cuckoo fly from a hedge with a large caterpillar in its beak, and suspecting it to be a larva of the Oak-Eggar Moth (*Lasiocampa quercus*) which I knew to be plentiful in the locality, I went to the place and gathered over twenty larvæ during the afternoon.

The egg of the Cuckoo has been taken in the district, from the nests of—*Pratincola rubetra*, *Sylvia cinerea*, *S. hortensis*, *Acrocephalus phragmitis*, *Accentor modularis*, *Motacilla lugubris*, *M. raii*, *Anthus trivialis*, *A. pratensis*, *Emberiza citrinella*, and *E. schœniclus*.

Strix flammea Linn. **Barn Owl.** Locally called Yellow Owl. Resident; not very common. It occurs in most parts of the district, and has bred at Thorp Arch, Walton, and Newton Kyme, and does so regularly at Ingmanthorpe and Wilstrop.

I have more than once seen an example in the pigeon-house mentioned in connection with the Starling, but it has never bred in it. At Wilstrop a nesting-hole has been regularly occupied by Barn Owls for the last thirty-five years. Two broods were reared last year (1890). There were six in the first and five in the second brood. I saw the latter in 'down' on November 1st, and Mr. Harrison tells me they were not on the wing until a month later. This nest chamber is about four feet square, and is paved to the depth of four inches with pellets, which form the only repository for the eggs or young birds. A note on the Barn Owl at Wilstrop (by Mr. Harrison) will be found in the Nat. Hist. Journal, Feb. 15th, 1879.

Asio otus (Linn.). **Long-eared Owl.** Resident, but uncommon; it occurs in many of the thicker woods, notably at Wetherby, and breeds at Newton Kyme, but this is the only place in the district where I know of it doing so.

Asio accipitrinus (Pall.). **Short-eared Owl.** Rare, and when seen it is generally in the winter. It has, however, occurred at other seasons of the year; one at Wilstrop 21st June, 1878 (Clarke, Zool., 1880, p. 353). Mr. J. G. Blanshard has one in his possession, which he shot at Walton in the spring of 1881, and Mr. John Harrison saw one in June, 1889, flying in the sunshine.

Syrnium aluco (Linn.). **Tawny Owl. Brown Owl.** Resident, and fairly common, more so than any other Owl in the district, in most of the woods of which it breeds.

Scops giu (Scop.). **Scops Owl.** One, now in the possession of Mr. Charles Fothergill, of York, was shot at Wetherby in the spring of 1805. (Mont. Ornith. Dict. Supp.).

Circus cineraceus (Mont.). **Montagu's Harrier.** Mr. John Harrison tells me that he saw a male at Wilstrop on June 3rd, 1886.

Circus cyaneus (Linn.). **Hen Harrier.** The late Henry Denny, in his Leeds Catalogue (Ann. and Mag. Nat. Hist., 1840), mentions it as being rare, and gives Thorp Arch as one of the localities where it had occurred. An example has been obtained near Wetherby, and another was picked up dead in a rookery at Thorparch about 1874.

Buteo vulgaris Leach. **Common Buzzard.** In the Leeds Catalogue above mentioned Denny cites it as rare, and gives North Deighton as one of the localities in which it had occurred. Mr. J. Redfern, the keeper at Wighill Park, has a very fine example, which he trapped there in November 1887.

Mr. Francis G. Binnie, of the Edinburgh University, sends me an account of the Common Buzzard, from which it seems probable that it has bred in the district. He writes:—'I find in my diary under date 27th February, 1868, the following note: "Mr. Simpson (bird-stuffer, York) told me that some years since he had bought from some boys at Tadcaster a pair of young Hawks, which, on rearing, turned out to be this species. The old birds had been seen several times afterwards."'

Archibuteo lagopus (Gmel.). **Rough-legged Buzzard.** Mr. Harrison informs me that one was shot at near Wilstrop by a keeper, who, however, failed to secure the bird.

Aquila chrysaëtus (Linn.). **Golden Eagle.** 'But one instance of this bird has occurred, which was a specimen shot in Stockeld Park, near Wetherby, November 29th, 1804' (Henry Denny, Ann. and Mag. Nat. Hist., 1840).

Astur palumbarius (Linn.). **Gos Hawk.** Mr. John Harrison saw one on the ground at Wilstrop in 1880; he was so near to the bird that he had no difficulty in recognising it. He went into his house for a gun, but when he returned the bird had disappeared, and was not seen again.

Accipiter nisus (Linn.). **Sparrow Hawk.** Resident and fairly numerous, but much harassed by the keepers and farmers, who, in addition to shooting and trapping the old birds, destroy the eggs and the young ones by firing through the nest, as is done with the Magpie and other species which they consider hurtful to game birds. The Sparrow Hawk, however, survives this continued persecution, and breeds regularly in most of the woods throughout the district.

Milvus ictinus Sav. **Kite.** In a MS. dated 1880 the late John Tennant wrote:—'Shot from the nest at Morton by the late Charles Harrison, who obtained both birds. A pair were shot in Redhouse Wood by A. Christie, in spring, 20 to 30 years ago. Pair passed over Wilstrop some years ago.' Mr. J. Harrison, who saw the last-named birds, tells me that the year was probably 1874. His attention was directed to the birds (which he easily recognised by their long forked tails) by their being mobbed by a large party of Rooks.

Pernis apivorus (Linn.). **Honey Buzzard.** An old female in the possession of Mr. Harrison was shot by a gamekeeper near Wetherby, on June 7th, 1873; and a second example, also an adult female, was shot at the same place on June 3rd, 1882, and stuffed by Ripley, of York.

Falco islandus Gmel. **Iceland Falcon.** 'In the collection of Mr. C. C. Oxley, of Ripon, is a fine specimen of the Iceland Falcon, which is said to have been shot on Marston Moor, in December 1826 or 1836. This bird was purchased by Mr. Oxley at the sale of the collection of the late Dr. Hobson, of Leeds' (Clarke, 'Birds of Yorkshire,' p. 10).

Falco peregrinus Tunstall. **Peregrine Falcon.** An immature female, now in the possession of Mr. John Harrison, was shot by his brother, the late Wm. Harrison, at Wilstrop, about 1860. This species is quoted as rare in the Leeds district by Denny, who mentions it as having occurred at Tadcaster (Ann. and Mag. Nat. Hist., 1840).

Falco subbuteo Linn. **Hobby.** I am told that the Hobby has occasionally been seen in the district, but the only specific record

I have of such a fact is that one was shot near Wetherby Grange 'about twenty years ago' (W. J. Milligan, 1880).

Falco æsalon Tunstall. **Merlin.** An occasional visitant to the district in winter. One was shot near Wetherby on the 16th December, 1877. A second is recorded also near Wetherby, Dec. 1877 (Backhouse, Zool., March 1878, p. 106).

Falco tinnunculus Linn. **Kestrel.** Local name, Brown Hawk. Resident. The commonest of the Falconidæ; breeds regularly in many of the woods throughout the district.

Falco cenchris Naum. **Lesser Kestrel.** A mature male, now in the York Museum, was shot at Wilstrop by Mr. John Harrison, in the middle of November, 1867 (for detailed account see Clarke's 'Birds of Yorkshire,' p. 21).

Phalacrocorax carbo (Linn.). **Cormorant.** The Rev. J. W. Chaloner has in his collection an example which he shot at Newton Kyme in 1852, and Mr. John Emmet tells me that the late Coote Alexr. Carroll saw three flying over Toulson Lodge in 1868.

Sula bassana (Linn.). **Gannet.** I am told that an example in immature plumage was picked up in 1888 at Hessay, about two miles from Wilstrop, having injured itself by flying against the telegraph wires.

Ardea cinerea Linn. **Heron.** Resident, and fairly common both on the Nidd and Wharfe. I have also several times flushed it from a reedy pond near Walton. It formerly bred in Wilstrop Wood, and has done so in recent years in a wood near Goldsborough, and also at Ribstone. The nearest heronry is at Harewood Park. There was formerly one at Wetherby (Harting, 'Field,' Feb. 7th, 1872, p. 146). In 1889 a pair nested at Ingmanthorpe, and successfully reared five young ones.

Botaurus stellaris (Linn.). **Bittern.** Formerly this now rare bird was not uncommon in the district, and has occasionally been seen during more recent years. 'It has been shot at Skewkirk' (Tennant MS., 1880). 'Shot near Smaws Wood, Tadcaster in 1842' (Emmet MS.). Mr. Wm. Cass has in his possession a very fine example which he shot on the Nidd, near Wilstrop, in 1860. A few years later one was shot at Spofforth. The Rev. J. W. Chaloner tells me that specimens have been obtained at Newton Kyme and Tadcaster. One recorded from Grimston Park, Tadcaster, was killed in December, 1884. (Backhouse, 'Naturalist,' 1884-5, p. 149). The last record of

this bird for the district is, 'A male was shot at North Deighton by Col. Wilkinson's keeper about three years ago, during the third week in May.' (Milligan, MS., 1880).

Anser cinereus Meyer. **Grey Lag Goose.** Small flocks of 'Wild Geese' frequently pass over the district in winter, and occasionally settle on the Wharfe and Nidd. This species has been obtained, but not nearly so commonly as *A. brachyrhynchus*.

Anser segetum (Gmel.). **Bean Goose.** It is just possible that this species may frequently occur among the 'Wild Geese,' and pass unnoticed. I have, however, the opportunity of recording one undoubted occurrence, having seen the bird, which is now in the possession of Mrs. Hatfeild, of Thorp Arch. It was shot out of a flock of six on the Wharfe, at Newton Kyme, on the 14th January last (1891) by Mr. Charles Chaloner.

Anser brachyrhynchus Baill. **Pink-footed Goose.** This is, I believe, the commonest 'Wild Goose' which visits the district, and has been shot on both the Wharfe and the Nidd. Mr. Tom Cass obtained three on the latter river near to Wilstrop, on February 8th, 1888.

Anser albifrons (Scop.). **White-fronted Goose.** Has occasionally occurred in winter. Mr. Wm. Cass shot several on the Nidd, at Wilstrop, during the winter 1885-6.

Bernicla brenta (Pall.). **Brent Goose.** I am told that this species has been obtained on the Wharfe, within the district I have, however, no specific record of the fact.

Bernicla leucopsis (Bechst.). **Barnacle Goose.** This species is not an uncommon, although irregular winter visitant. An example was shot on the Nidd by Mr. Charles Whincup in November, 1860. It has several times occurred on the Wharfe, and the Rev. J. W. Chaloner shot two at Newton Kyme in the winter of 1889-90, one of which is in the possession of Mrs. Hatfeild, of Thorp Arch.

Bernicla canadensis (Linn.). **Canada Goose.** An introduced species. I have occasionally seen this bird on the Wharfe, near Thorp Arch. It has also occurred on several occasions on the Nidd. Mr. Wm. Cass shot one on that river near to Wilstrop, and Mr. Harrison thinks that this is one of the two examples in the 'Milner Collection' at the Leeds Museum. All the occurrences of this bird within the district are very probably stragglers from Harewood Park, where they are kept in a semi-domesticated state.

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Cygnus olor (Gmel.). **Mute Swan.** A domesticated species which occasionally straggles into the district.

Cygnus immutabilis Yarr. **Polish Swan.** An example of this bird (perhaps to be regarded merely as a variety of *C. olor*, cf. Proc. Zool. Soc., 1876, p. 466) was shot by Mr. John Harrison out of a flock of two or three at Wilstrop during late autumn, 1860.

Cygnus musicus Bechst. **Whooper Swan.** An occasional winter visitant. Small flocks of Swans sometimes pass over the district in winter, but usually at such an elevation that it is impossible to distinguish the species. Nine Whoopers were seen on the Nidd at Wilstrop for nearly a week, about Christmas in 1859, during a very severe snow-storm, and of these five were shot. They were, I am told, all served up for 'Christmas dinner.'

Tadorna cornuta (Gmel.). **Sheldrake.** An occasional straggler, generally during the floods. A male was shot at Wilstrop out of a flock of five, by Mr. J. Harrison, in Oct. 1881. This bird passed into the possession of Mr. J. Backhouse, of Harrogate.

Anas boschas Linn. **Mallard. Common Wild Duck.** Resident and fairly common, much more so in winter: occasionally breeds in the district; has done so at Wetherby.

Dafila acuta (Linn.). **Pintail.** Very rarely seen, and only in winter. Mr. John Harrison shot two on the Nidd at Wilstrop, in the winter of 1881-2. The Rev. J. W. Chaloner has seen several of these birds at Newton Kyme, one of which fell to his gun in 1856.

Querquedula crecca (Linn.). **Teal.** Common on the Wharfe, but less so on the Nidd; generally seen in winter, and occasionally in summer, but I have no record of it having bred in the district.

Mareca penelope (Linn.). **Wigeon.** A regular winter visitant and fairly common on both the Wharfe and the Nidd; some seasons it is much more numerous than others.

Fuligula ferina (Linn.). **Pochard.** Locally known as Red Head. Not uncommon in winter; appears in larger numbers when the land is flooded.

Fuligula cristata (Leach). **Tufted Duck.** A winter visitant; somewhat irregular and never common; has occurred on both the Nidd and the Wharfe, and several examples have been shot by Rev. J. W. Chaloner on the latter river, at Newton Kyme.

Fuligula marila (Linn.). **Scaup.** Winter visitant. Mr. Harrison tells me that he has shot several examples on the Nidd, at Wilstrop. I have no record of it for the Wharfe, although it no doubt has occurred.

Clangula glaucion (Linn.). **Golden-eye.** Specimens have been obtained both on the Nidd, at Wilstrop, and on the Wharfe, at Newton Kyme. Although not common, this species cannot be considered rare.

Harelda glacialis (Linn.). **Long-tailed Duck.** An example has been shot at Wilstrop (Tennant, MS.). There is no reason why this bird should not have occurred in the district. A female in the 'Milner Collection' at the Leeds Museum was obtained at Nun Appleton in 1869, and Mr. Riley Fortune saw a pair at Killinghall in December 1883 ('Birds of Harrogate,' p. 12). Since the foregoing was in type, Mr. J. Harrison, in looking over the proofs, tells me that he shot the bird recorded from Wilstrop.

Œdemia nigra (Linn.). **Common Scoter. Black Duck.** The Rev. J. W. Chaloner informs me that this species has occurred several times at Newton Kyme; he has an example in his possession which he shot there. Mr. John Harrison has one which he shot at Wilstrop in 1875, and he has seen others in the locality.

Mergus merganser Linn. **Goosander.** Local name of the female, Dun Diver. Regular winter visitant in small numbers. Nine were seen on the Wharfe at Newton Kyme on March 6th, 1884 (Naturalist, 1883-4, p. 151). Mr. Wilson of Wetherby has two specimens which he shot there in March 1886; one of them was only slightly damaged, and on being seized, it disgorged a trout 10 inches in length. Mr. Charles Chaloner shot two out of a flock of five at Newton Kyme on 6th January last (1891). Mr. Wm. Cass has shot several on the Nidd at Wilstrop.

Mergus albellus Linn. **Smew.** The Rev. J. W. Chaloner shot a male on the Wharfe at Newton Kyme; this bird passed into the possession of Mr. George Lane Fox. I have had the opportunity of examining a copy of 'Bewick' which belonged to the late Wm. Hatfeild of Newton Kyme, and under this species Mr. Hatfeild has made the following note:—'I assisted John Chaloner, Jun., of Newton Kyme, to bag a bird of this species in the winter of 1829-30, and compared it with this print, which is a very good representation. He has had it

stuffed.' An example was obtained on the Nidd by Mr. Proude about 1850; and a female was shot at Grimston near Tadcaster, Nov. 10th, 1879.

Columba palumbus Linn. **Ring Dove. Wood Pigeon.** Generally spoken of as Stock Dove. Resident, and very abundant; it is rapidly increasing in numbers, and breeds in all suitable places within the district.

An example which I obtained at Thorp Arch on Dec. 2nd, 1890, was feeding on a whitethorn hedge along with many others, its crop contained:—30 acorns, 151 haws, and 16 grains of barley.

Columba œnas Linn. **Stock Dove.** Local names, Rock Pigeon or Blue Rock. Resident and very common, but local; breeds regularly in the district wherever suitable nesting-places exist, as in the farm-buildings at Bilton, Wilstrop, etc.; but more abundantly at 'Jackdaw Crag' and the limestone cliff on the opposite side of the Wharfe.

Turtur communis Selby. **Turtle Dove.** Summer visitant. Has occasionally occurred. One year a pair frequented Wilstrop Wood throughout the summer, and Mr. John Harrison thinks they bred, but the nest was not found. 'An example was shot at Wetherby on 10th July, 1879' (Milligan, MS.). They have been seen on several occasions at Scarthingwell, a few miles south of Tadcaster.

Syrrhaptes paradoxus (Pall.). **Pallas's Sand-Grouse.** Mr. John Harrison tells me to include this bird in my list, as he saw five together in one of his fields at Wilstrop during the recent irruption (1888).

Lagopus scoticus (Lath.). **Red Grouse.** This moorland bird is never seen in the district except during particularly severe and prolonged hard weather. One was seen at Newton Kyme in winter 1856, and during the severe snow-storms which prevailed in the early part of 1886, when grouse perished in all parts of the county, single examples were obtained at Marston Moor, Walton, Cowthorpe, and Wetherby (Chaloner, 'Naturalist,' 1886, p. 68). The long-continued frost of the present winter has driven the grouse again into the lowlands, but not into the Ainsty district.

Phasianus colchicus (Linn.). **Pheasant.** Resident, common, might be more so but for the fox, which is regarded as of more importance in this hunting district.

Perdix cinerea Lath. **Partridge.** Resident and abundant throughout the district. If a sitting Pheasant should be taken by the fox, the keepers sometimes place the eggs under a Partridge, which usually rears the young successfully.

Coturnix communis Bonnat. **Quail.** Summer visitant. The district is particularly interesting, as being annually favoured by visits of the Quail. It has occurred at Wetherby, Boston Spa, Collingham, Newton Kyme, and once at Wilstrop. Was particularly numerous in the district in August 1848. They bred at Collingham in that year, and the Rev. J. W. Chaloner ('Field,' Aug. 7th, 1880) states that the Quail bred regularly at Newton Kyme up to 1830; and Mr. John Emmet informs me that it did so at Boston Spa up to 1881—mentioned as breeding there third week in July 1878 (Clarke, Zool., p. 353); a nest with eight eggs was found in a field at Boston Spa by the mowers during the first week of August, 1879—since which time I have not heard of it having done so, although I saw it there in 1885.

Crex pratensis Bechst. **Land Rail. Corn Crake.** Locally, Daker Hen. A very common summer visitant, but some years not so numerous as others. It breeds regularly throughout the district. One was killed at Healaugh by Mr. E. C. Brooksbank at a very unusual date, 24th December, 1884 (Chaloner, 'Naturalist,' 1884-5, p. 149). Mr. F. G. Binnie (who formerly resided in the Ainsty) tells me that this bird was remarkably scarce in 1868, and writes:—'The summer was very hot and tropical in its character; pastures were burnt up and ponds became dry; water had to be carted into the fields, and cattle fed upon "cake" as in winter. At Tadcaster my father heard the Corn Crake only two or three times, and I did not hear it once, although in other years it was common enough in the meadows around our house.'

The grass-cutting machines prove very destructive to the Landrail. Not only are the eggs broken, but both the young and old birds are frequently caught by the knives.

Rallus aquaticus Linn. **Water Rail.** Resident, but uncommon, although perhaps, owing to its skulking habits, much overlooked, as it is seldom seen except when flushed by the dog. It has occasionally been killed by flying against the telegraph wires. Mr. J. R. Hatfeild shot one on the 15th of January last (1891). Mr. John Emmet writes:—'The Water-rail bred near to Boston Spa this year and last year also' (Naturalist, 1884-5, p. 299).

Gallinula chloropus (Linn.). **Waterhen. Moorhen.** Resident, very abundant: it breeds in all suitable places throughout the district.

Fulica atra Linn. **Coot.** Resident, but not common. I have seen it at Wilstrop, where it breeds among the sedges on the banks of the Nidd. It is more numerous on the Wharfe, but not nearly so plentiful as the Waterhen.

Otis tarda Linn. **Great Bustard.** A female in the York Museum was shot on Rufforth Moor, near York, by Mr. Richard Rogers, on the 22nd February, 1861. ('Allis Zoologist,' 1861, p. 7507). My friend, Mr. John Harrison, tells me that he saw a female—no doubt the same bird—at Wilstrop a day or two previous to the date mentioned.

Œdicnemus scolopax (Gmel.). **Stone Curlew. Thick-knee.** I am told that one was caught in a flax field at Bilton by the Rev. Christopher Wilkinson, of Bilton Hall, 'about 25 years ago.'

Cursorius gallicus (Gmel.). **Cream-coloured Courser.** Denny, in his Leeds catalogue (Ann. and Mag. Nat. Hist., 1840) writes: 'A specimen was shot in April, 1816, in a fallow field, near Wetherby, by Mr. Rhodes, of that place, which afterwards came into the possession of George Walker, Esq., of Killingbeck Lodge, near Leeds. There cannot remain the least doubt as to the authenticity of the species.' (See also Atkinson's Comp. Ornith., 1820, p. 165).

Eudromias morinellus (Linn.). **Dotterel.** The late John Tennant shot one at Wilstrop, and Mr. John Emmet tells me that it has occurred at Boston Spa.

Ægialitis hiaticula (Linn.). **Ringed Plover.** A casual visitant. Seen on several occasions in the district in winter and spring.

Ægialitis curonica (Gmel.). **Little Ringed Plover.** One was shot in a ploughed field at Whixley (north of the Nidd) by Mr. James Styan, on July 30th, 1850. ('Garth. Zool.,' 1850, p. 2953).

Charadrius pluvialis Linn. **Golden Plover.** Occurs in small flocks in winter. It is rather more numerous after snow-storms, and especially so in severe seasons.

Vanellus vulgaris Bechst. **Lapwing.** Resident; frequenting low-lying and poor land, and very abundant. In autumn its numbers are greatly increased by immigration. It breeds in all suitable localities throughout the district.

Hæmatopus ostralegus Linn. **Oystercatcher.** Has several times occurred in the district. Mr. John Harrison saw three together at Wilstrop in the spring of 1882.

Phalaropus fulicarius (Linn.). **Grey Phalarope.** The Rev. J. W. Chaloner has a specimen in his collection which he shot near Tadcaster—he shot two, but owing to one being badly damaged, it was thrown away. He cannot give me the date.

Scolopax rusticola Linn. **Woodcock.** Occurs annually in autumn and winter in varying numbers, never very numerous, and in some winters is scarce.

Gallinago major (Gmel.). **Great Snipe.** This bird is no doubt much overlooked. Mr. John Harrison had obtained examples at Wilstrop on two separate occasions. The late John Tennant wrote :—'My uncle, H. Tennant, shot two, one of which I saw.' (MS., 1880).

Gallinago cœlestis (Frenzel). **Common Snipe.** Resident and very common, more especially in winter, frequenting low-lying lands, preferably those which are submerged during the floods. It breeds in all such localities throughout the district.

Gallinago gallinula Linn. **Jack Snipe.** Winter visitant; occurs annually, but never in very large numbers. It is much less common than *G. cœlestis*.

Machetes pugnax (Linn.). **Ruff.** The Rev. J. W. Chaloner informs me that the Ruff was formerly common at Wighill Ings and bred at Newton Kyme. The latest record for the district is that a female (Reeve) was shot at Bilton in the winter of 1880-1 by Mr. Richard Skilbeck.

Totanus hypoleucus (Linn.). **Common Sandpiper.** Local name, 'Sand Snipe.' A summer visitant, but not numerous; it breeds on the banks of the Wharfe and the Nidd; more commonly at Collingham than elsewhere in the district.

Totanus ochropus (Linn.). **Green Sandpiper.** A rare visitant: it has, however, occasionally been seen in several parts of the district during the spring and autumn migration. The Rev. J. W. Chaloner has shot several examples at Newton Kyme, one of which he has in his possession; he records having seen four specimens there on June 28th, 1883 ('Naturalist,' Aug. 1883, p. 21).

[**Totanus flavipes** (Gmel.). **Yellowshank.** In the 'Handbook of Yorkshire Vertebrata,' p. 77, the following appears concerning this bird :—'Tadcaster, one, Oct. 1858 (Milner, Zool., 1858,

p. 5958; Graham, Nat., 1858, p. 291).' Having examined these references, I find that Sir Wm. Milner states the bird was obtained at Misson in Yorkshire. This place, although on the border of the two counties, is in reality in Nottinghamshire, so that the bird must not only not be included in the present list, but must be removed from the Yorkshire list also. With regard to Graham's note, Mr. Howard Saunders, in the 4th edition of Yarrell's 'British Birds,' p. 481, writes:—'. . . another example was stated by Graham of York (Nat., 1858, p. 291) without a particle of substantiating evidence, to have been obtained near Tadcaster.' The figure and description given in Yarrell's 'British Birds' were taken from this specimen, which is now in the Leeds Museum.]

Totanus calidris (Linn.). **Redshank.** A casual visitant. 'A pair bred at Wilstrop some years ago, but the female was taken by a Sparrow Hawk' (Tennant, MS. 1880). Another pair bred in the same spot in 1884; they were possibly stragglers from Strensall Common near York, at which place this species breeds annually.

Totanus canescens (Gmel.). **Greenshank.** Has occasionally been seen in the district. The Rev. J. W. Chaloner has one which he shot at Newton Kyme, and the late Wm. J. Milligan of Wetherby wrote:—'A Greenshank was brought to me on August 22nd (1879), shortly after it had been shot near here. It is a rare bird with us' (Field, vol. liv, 1879, p. 374).

Numenius arquata (Linn.). **Curlew.** This bird has occasionally occurred in the district, more frequently in winter, generally passing over.

Sterna fluviatilis Naum. **Common Tern.** Not unfrequently seen during the floods in autumn.

Rhodostethia rosea Macgill. **Wedge-tailed Gull. Cuneate-tailed Gull. Ross's Gull.** The only English example of this very rare Gull was shot near Tadcaster by Mr. Thomas Robinson, of Saxton, near Aberford, on the 22nd December, 1846 (W. M. E. Milner, 'Zoologist,' 1847, p. 1694). It is also described as being killed by Horner, Lord Howden's head keeper, in February, 1847, in a ploughed field near Milford-cum-Kirby [near Tadcaster]. (Charlesworth—quoting Henry Milner, Proc. Yorks. Phil. Soc., vol. i., 1847, p. 36). This specimen is now in the Leeds Museum, and is described by Mr. Howard Saunders as being in winter plumage ('Field,' February, 1875, p. 196).

Larus ridibundus Linn. **Black-headed Gull.** Small flocks of Gulls often pass over in winter, but usually at a great height. This is the commonest Gull which visits the district, and examples have been shot at several places. I obtained a young bird in its first year's plumage at Walton, on the 25th June, 1890. (Naturalist, July, 1890, p. 210).

Larus canus Linn. **Common Gull.** Occurs, but not nearly so commonly as *L. ridibundus*. Stragglers are occasionally obtained during boisterous weather in late autumn and winter. They are usually birds of the year, and when not on the wing, they generally confine themselves to recently ploughed fields.

Larus argentatus Gmel. **Herring Gull.** This species has occurred in the district, though very rarely. It has been shot at Wilstrop by Mr. John Harrison.

Rissa tridactyla (Linn.). **Kittiwake.** Has occurred during winter, and examples have been shot at several places in the district.

Stercorarius pomatorhinus (Temm.). **Pomatorhine Skua.** An example was obtained at Towton in October, 1879, and a second, now in the possession of the Rev. J. W. Chaloner, was shot by him at Newton Kyme about the same time. This was during the great irruption, when scores of specimens were obtained on the East coast of England, and individuals were shot very far inland.

Mergulus alle (Linn.). **Little Auk.** The Rev. J. W. Chaloner records the fact that an example was picked up dead by the mowers in a meadow at Newton Kyme, on the 16th July, 1885. ('Naturalist,' 1885, p. 299). He tells me that the bird had been dead so long as to be of no use for a specimen, and it was thrown away.

Fratercula arctica (Linn.). **Puffin.** One was shot on the Wharfe at Wetherby in November, 1870 (Wesley, 'Field,' November 19th, 1870).

Colymbus glacialis Linn. **Great Northern Diver.** In a MS., dated 14th May, 1880, Mr. John Emmet, of Boston Spa, writes:—'Mr. Chaloner considers this bird the scarcest ever taken at Newton Kyme. He took three birds about the year 1826 or 1827.' In looking over my proofs, Mr. Chaloner tells me that he saw the birds but did not obtain them, and adds that the date was 1818 or 1819.

Colymbus septentrionalis Linn. **Red-throated Diver.** The Rev. J. W. Chaloner, of Newton Kyme, shot an example there,

but not knowing the bird, he had it mounted, and it is now in his possession. The taxidermist told him that it was a 'Satin-breasted Grebe.' On seeing the specimen I found it to be a Red-throated Diver in winter plumage.

Podiceps cristatus (Linn.). **Great Crested Grebe.** I am told that it has been obtained on two or three occasions in the district in winter, and the Rev. J. W. Chaloner has one which he shot at Newton Kyme.

Tachybaptes fluviatilis (Tunstall). **Little Grebe. Dabchick.** Resident, though not very common. It generally occurs on reedy ponds, but also on both the Wharfe and the Nidd. It breeds at Wilstrop, and has done so at Ingmanthorpe.

Procellaria pelagica Linn. **Storm Petrel.** Mr. John Emmet tells me that a specimen was found dead in the garden of Toulson Lodge, and in a MS., dated 1880, the late W. J. Milligan, of Wetherby, wrote:—'A single example passed into my hands about three years ago. It was shot at Compton, near Collingham, but so heavily damaged that I could not set it up. I made it into a skin.'

Procellaria leucorrhoa Vieill. **Leach's Petrel. Fork-tailed Petrel.** An example was obtained at Kirk Hammerton during the winter of 1850-1 ('Yorkshire Vertebrata,' p. 85), and the Rev. J. W. Chaloner has an example which was picked up dead at Newton Kyme, under a gooseberry bush.

REPTILES.

Tropidonotus natrix (Linn.). **Common Snake. Ringed Snake.** Locally known as Dung-hill Snake. It occurs at several places in the district. I have seen it at Marston, Walton, and near to Wetherby; I am told that it also occurs at Newton Kyme and Collingham, so it is pretty generally distributed, but is nowhere common. At Bickerton, some men who were leading manure in the winter came across seven or eight coiled together in the middle of the manure-heap.

Vipera berus Linn. **Viper. Adder.** I have made assiduous search for the Viper in all suitable places that I know of in the district, but have never yet found it. I am told that it has been seen at Collingham and also at Thorp Arch, but I am not satisfied on this point. The Rev. J. W. Chaloner killed one in 1846 at Deepdale, opposite Thorp Arch Hall, but on the south side of the river. It occurs sparsely at Bramham.

Lacerta vivipara Jacq. **Common Lizard. Viviparous Lizard.** Having found this reptile in many places within the district, I believe it is generally distributed throughout; but it is certainly not common.

Anguis fragilis Linn. **Slow-worm. Blindworm.** The only place in the district where I have met with the Slow-worm is in an old sand-quarry near to Thorp Arch, where it is not uncommon. I am told, however, that it also occurs at Collingham.

AMPHIBIANS.

Triton cristatus Laur. **Great Crested Newt.** Mr. John Harrison tells me that it occurs at Wilstrop, and I am informed by the Rev. J. W. Chaloner that he has seen it at Newton Kyme, and by Mr. F. G. Binnie that it was to be found in some ponds around Tadcaster in 1872. The only place in the district where I have met with it is in an old tan-pond near Walton, but it is far from common. I have kept several in the aquarium which I got there, and noticed that they cast their skins every time the water was changed. In 'British Reptiles,' p. 127, Professor Bell writes:—'The Newts shed their skin in the same way as other aquatic amphibia; *it comes off in shreds*, and is washed away as it becomes loose.' This has not been my experience; all my Newts (*T. cristatus*) have cast their skins whole, and I have mounted one or two skins which are perfect, even to the toes.

Triton tæniatus (Schneid.). **Smooth Newt.** Locally called Askern. Common in every suitable pond and cattle-trough throughout the district.

Bufo vulgaris Laur. **Common Toad.** Common and generally distributed throughout the district.

Rana temporaria Linn. **Common Frog.** Extremely abundant in all parts of the district.

FISHES.

Acipenser sturio Linn. **Sturgeon.** This, our only British ganoid, has occurred in the Wharfe as high as Arthington, but not since the weirs have been constructed. Mr. John Emmet tells me that he remembers one being obtained at Boston Spa, which weighed fifteen stones. Another example was landed at Stutton Mill, near Tadcaster.

Perca fluviatilis Linn. **Perch.** Occurs in both the Nidd and the Wharfe, but not plentifully. Those from the Wharfe are much finer than the Nidd specimens, but are not to be compared to those from Malham Tarn.

Acerina cernua (Linn.). **Ruffe. Pope.** This little fish is very common in the Wharfe, but I regard it as scarcer in the Nidd. It is a practice with the lads when they catch a 'Tommy Bar,' as it is locally called, to stick a cork on the dorsal fin and let the fish go, which, of course, compels the little creature to swim at the surface.

Cottus gobio Linn. **River Bullhead. Miller's Thumb.** It occurs in the Nidd, but is not common. It is very plentiful in the Wharfe.

Gasterosteus aculeatus Linn. **Three-spined Stickleback.** Common in both the Nidd and the Wharfe. It also occurs in several ponds and ditches in the district, more especially those in which the water is freely moving.

Gasterosteus pungitius (Linn.). **Ten-spined Stickleback.** I am indebted to Mr. Francis G. Binnie, of the Edinburgh University (formerly of Tadcaster) for the following note on this species:—He writes: 'I owe my acquaintance with this small species to my being occupied with the study of aquatic invertebrata. I found it in a small pond near Healaugh Hall, and in another near Tadcaster. In the latter I only became aware of its existence on the pond drying up during the hot summer of 1868, when, of course, the little fishes were all killed.' Mr. Binnie adds:—'It thus differs from its ally *G. aculeatus* in a greater tolerance of stagnant water, for I never found the latter in small ponds, but almost invariably in running water of ditches, becks, &c.'

Lota vulgaris Cuv. **Burbot. Eelpout.** This is a rare fish in the district. It has, however, occurred in both the Nidd and the Wharfe, and Mr. J. W. Grassham tells me that it is not so uncommon in the latter river below Tadcaster. He frequently meets with it at Ulleskelf.

Pleuronectes flesus Linn. **Flounder.** A few very small examples may generally be found in the Nidd. They attain a larger size in the Wharfe, which is tidal as high as Tadcaster. They are occasionally caught there by means of rod and line. One was caught at Thorp Arch a short while ago, but it is not easy to understand how it got over the dam at Tadcaster.

Cyprinus carpio Linn. **Common Carp.** This introduced species is very rarely taken, although it has been obtained from both the Wharfe and the Nidd, and was formerly plentiful in a pond at Newton Kyme.

Barbus vulgaris Flem. **Barbel.** Plentiful in the Wharfe, especially so in Boston Spa 'Deeps.' It also occurs in the Nidd, but in smaller numbers.

Gobio fluviatilis Flem. **Gudgeon.** Common in both the Nidd and the Wharfe, generally used as bait for Pike.

Leuciscus rutilus (Linn.). **Roach.** Abundant in both the Nidd and the Wharfe, more especially so in the latter river.

Leuciscus cephalus (Linn.). **Chub.** Plentiful, equally so in both the Nidd and Wharfe.

Leuciscus vulgaris Flem. **Dace.** This species like most of the *Leuciscina* of the district is common in the Nidd and also in the Wharfe.

Leuciscus phoxinus (Linn.). **Minnow.** This little fish, although too small to be of use on its own account, is largely caught and used as bait for Trout; the females are preferred on account of their brighter colour. It is very common in both the Nidd and Wharfe.

Tinca vulgaris Cuv. **Tench.** I am told by Mr. John Harrison that this species occurs in very small numbers in the Nidd, but is very rarely found in the Wharfe. It has been taken at Thorp Arch.

Abramis brama (Linn.). **Bream.** It is fairly common in the Wharfe below Tadcaster, but is not found above the Weir.

Alburnus lucidus Heck. & Kner. **Bleak.** In Denny's Catalogue (Ann. and Mag. Nat. Hist., 1840) this species is recorded under the name of *Leusciscus alburnus*, as occurring at Tadcaster. The Rev. J. W. Chaloner tells me that it was formerly common there but it does not occur now.

Nemachilus barbatulus (Linn.). **Loach.** Abundant in both the Nidd and the Wharfe.

Esox lucius Linn. **Pike.** Common in the Wharfe especially at Boston Spa 'Deeps.' It also occurs in the Nidd, but not so plentifully.

Salmo salar Linn. **Salmon.** Common in the Wharfe, but rarely met with in the Nidd.

Salmo fario Linn. **Trout.** Fairly common in the Wharfe, but less so than formerly. It is said by the natives that the decrease

in numbers is mainly attributable to the pollution poured into the river from the Otley paper mills. The Wharfe within the district is becoming more a Grayling than a Trout stream (J. Heart, 'Field,' Oct. 13th, 1888, p. 537.). But Mr. J. N. Walbran, of Leeds, tells me that the Trout is the commoner fish in the higher reaches of the river, *e.g.*, about Burnsall. This fish is far from common in the Nidd.

Thymallus vulgaris Nilss. **Grayling.** Very common in the Wharfe, where it appears to be increasing in numbers. It is always caught more plentifully during winter. The Grayling is also found in the Nidd, but is not nearly so common.

Clupea alosa Linn. **Allis Shad.** In Denny's catalogue before referred to, the author writes:—'I purchased a specimen of this fish in the (Leeds) Market for our Museum, which was said to have been taken at Tadcaster.'

Anguilla vulgaris Flem. **Sharp-nosed Eel.** Locally called Silver Eel and Snig. Abundant in the Wharfe, but more so in the Nidd, which is a slower-moving stream.

A common method of catching Eels is to thread a few score of dew worms on to a piece of worsted; the whole is twisted into a mass and sunk in the river, at a spot where Eels are numerous. After a while a landing-net is placed carefully beneath the mass, and the fish, having swallowed the worms, are sometimes caught in very large numbers.

Anguilla latirostris Risso. **Broad-nosed Eel.** Local name, Black Eel. Common in both the Nidd and the Wharfe, but not nearly so abundant as *A. vulgaris*.

Petromyzon fluviatilis Linn. **Lampern.** The River-Lamprey is plentiful in both the Nidd and the Wharfe.

In preparing the foregoing Lists, and especially that relating to the Birds, I have to acknowledge much kind assistance rendered by the Rev. J. W. Chaloner, of Newton Kyme, and Mr. John Harrison, of Wilstrop Hall, whose acquaintance with their own districts has been seventy years and forty years respectively. I am indebted to my friends Messrs. Wm. Eagle Clarke and Wm. Denison Roebuck for access to a large amount of published records and to manuscripts by the late John Tennant and Wm. J. Milligan, which have enabled me to complete the bibliography of the district. I take this opportunity of thanking Mrs. Hatfeild, of Thorp Arch Hall, for granting me every facility for the investigation of her estate; and also to Mr. J. Lloyd Wharton, M.P., of Bramham, for permitting research on his game preserves in the Walton district.

WHITE GROUSE AND WHITE PARTRIDGES IN YORKSHIRE.

Rev. H. A. MACPHERSON, M.A., M.B.O.U., Etc.,

Author of the 'Visitation of Pallas's Sand-Grouse to Scotland,' etc.

In the course of exploring old records in search of notes bearing on the Lake District, I happened to come across the accompanying notes, which may, perhaps, possess some local interest for Yorkshire naturalists.

(1) **Lagopus scoticus.** The 'Carlisle Patriot' of October 25th, 1828, supplies the following short paragraph :—

> 'A curious specimen of the grouse or heath fowl was last week shot by Richard Metcalf, gamekeeper to L. Topham, Esq., at Middleham. Its belly was entirely white, its eyes and legs a beautiful pink, and the rest of its body of a delicate fawn colour.'

(2) **Perdix cinerea.** A note on this species appears in the 'Gentleman's Magazine' of 1797, p. 342 :—

> 'Natural Curiosity.—There are now at Henry B. Barnard's, Esq., at South Cave, in the East Riding of Yorkshire, seven partridges, four of which are of the most delicate milk-white, without a single coloured feather. The remaining three are pied. The covey consisted of eight. The above seven were taken by a net in September last, the eighth escaped. They are kept in a place built for the purpose of keeping pheasants and birds of that kind, and do not appear to suffer at all from their confinement.'

NOTES AND NEWS.

We regret to have to record the death, after a long period of ill-health, of Mr. Henry B. Brady, a native of Gateshead and for many years a well-known resident of Newcastle-on-Tyne. Though both a chemist and a botanist, Mr. Brady was best known for his numerous and valuable memoirs on the foraminifera, both recent and fossil, and especially for his two quarto volumes describing the foraminifera collected by the 'Challenger' Expedition. He was a Fellow of the Royal, the Geological, the Chemical, and other Societies, and a contributor to many scientific publications. He died on January 10th, in his fifty-sixth year.

Two north-country geologists have received honourable recognition from the Geological Society of London. At the anniversary meeting on February 20th the Lyell Medal was presented to Prof. T. McK. Hughes, F.R.S., and a portion of the Lyell Donation Fund to Mr. G. W. Lamplugh of Bridlington Quay.

In Memoriam.

ROBERT CALVERT.

By the death, on the 21st February, of Mr. Robert Calvert, Bishop Auckland has lost one of its oldest, best known, and most picturesquely historical residents. He was born at Jock's Row, by the Wear Side, at Bishop Auckland, on 25th October, 1815; educated at the Barrington School; and apprenticed to Peter Fair, then the only printer in the town. After his apprenticeship, he started business in Sunderland, and had episodical dealings with the famous artist, John Wilson Ewbank, R.S.A., whose life was one of strange and pathetic vicissitudes. Mr. Calvert knew Ewbank and his daughter when in the deeps of misfortune. The daughter in those days helped her father in painting, and in going round to dispose of the work. Mr. Calvert frequently bought of Ewbank paintings on sheets of tin, thrown off quickly to get food, and as often to get drink. Mr. Calvert next went into business at Cockfield, and subsequently returned to Bishop Auckland, where he began the business of auctioneer, valuer, etc. He retired a few years ago on ample means, the result of industry, good habits, intelligence, and sterling character. He had a considerable knowledge of the fauna of the county of Durham before it became disturbed by the opening out of collieries and the consequent increase of population. I have a pair of Crossbills shot by him some time in the 'fifties,' up the Wear Valley near Wolsingham, at a place where they had nested. My latest dealings with him were in connection with an article by Mr. J. H. Gurney, 'On the occasional appearance in England of the Crested Tit,' in the 'Zoologist' for June 1890, wherein Mr. Gurney writes:—'In the county of Durham it has been shot once, on Sunderland Moor, in January 1850, and the specimen is said (Zool., p. 2766) to be in the possession of a Mr. Calvert, whom I have tried to trace, but in vain.' Knowing that he had lived in Sunderland, I inquired of Mr. Calvert if he had the bird in question; he replied in the affirmative, saying that two had been shot, and he kindly presented one to me.

But it was as an entomologist that he had most experience, and he has left insect collections of no ordinary value. I remember his surprise and delight when told of the swarms of Fritillaries I had noticed in the open glade of a wood, within a few miles of Bishop Auckland, and of whose presence he was not aware; he promptly visited the place and secured some very good examples. He was

also an accomplished botanist and geologist, and some ten years ago published a work on the latter subject, with special reference to the strata of the county. He often worked in company with the late Mr. Joseph Duff, another well-known Bishop Auckland naturalist, who died some four or five years ago, and whose magnificent collection of fossils is now in Newcastle Museum. An old friend of Mr. Calvert's, writing on March 2nd, says:—'I had a walk with Calvert on the 8th of February; he was in very good health then, and told me that the 24th of February would be the sixty-fourth anniversary of his apprenticeship to Peter Fair. He little thought then that, on that anniversary, his own funeral would take place.'

T. H. NELSON.

NOTES—ORNITHOLOGY.

Water Rail at North Stainley near Ripon.—A Water Rail (*Rallus aquaticus*) was shot here on January 8th.—R. A. SUMMERFIELD, North Stainley Vicarage, Ripon, Feb. 5th, 1891.

Great Northern Diver near Wakefield.—I have to record for the 30th of October a fine male Great Northern Diver (*Colymbus glacialis*) in partial summer dress, a great many of the spotted feathers on the back and wing coverts yet remaining; weight, 9 lbs. It was shot near Wakefield, and is the second specimen within three years, as I have in my collection a fine winter-dress bird got in March 1888.—GEO. PARKIN, York Street, Wakefield, Nov. 7th, 1890.

Great Northern Divers and Long-tailed Duck near Morecambe.—My friend, Mr. W. Woodhouse of Morecambe, informs me that a Great Northern Diver (*Colymbus glacialis*), female, was shot from the Old Pier on the 15th December last, and, on the 9th January, he writes that another had been seen for some days previously near the same place. Early in January, Mr. Woodhouse shot a Long-tailed Duck (*Harelda glacialis*) opposite Morecambe, between the two Piers.—T. H. NELSON, Oxley Villa, Redcar, 18th February, 1891.

Bittern in North Lincolnshire.—A fine specimen of this now rare British bird (*Botaurus stellaris*) was shot in this parish on December 11th, 1890, by Mr. Geo. Trimmingham. It was in an old disused sand-pit, overgrown with tall reeds, rushes, and other water-plants. a place well known to our local gunners as a sure 'find' for a snipe or duck. Unfortunately, Trimmingham not knowing its value sold it to a Hull game dealer. The Bittern was once common in the Fen district of Lincolnshire, and known to the old Fen folks as 'Mire-drum' or 'Butter-bump,' from the peculiar noise it made during the nesting season.—J. W. HARRISON, Goxhill, Lincolnshire. January 23rd, 1891.

NOTE—MOLLUSCA.

Burrowing Mollusca.—I am interested in Mr. Collinge's paper on burrowing. I have had considerable experience with *Testacella maugei* at Bristol, and always found it from six to twelve inches below the surface. Its retreat can be detected by the very clean-cut hole it leaves—very different from a worm's hole—under some sheltering plant (the garden pink, viola, pansy, etc.) I have often found *Hyalina nitidula* below ground. As regards *H. fomatia*, I found it frequently in the N. of Italy (especially on the shores of Lake Como), buried a few inches below the surface (in hedgerows, etc.), in August and beginning of September, 1886—when the weather was quite tropical—with the usual solid epiphragm. Specimens showing this are in my collection.—B. TOMLIN, The Green, Llandaff, March 7th, 1891.

MISCODERA ARCTICA AND PTEROSTICHUS ÆTHIOPS IN LANCASHIRE.

C. REDMAN,

St. Benno's College, St. Asaph, North Wales.

I AM informed by Dr. J. W. Ellis that *Miscodera arctica* and *Pterostichus æthiops* have not been hitherto recorded for Lancashire.

I found a single specimen of the former in June 1884, on Longridge Fell, which is situated about half-way between Whitewell and Ribchester. The insect was verified at the Natural History Museum, South Kensington. In 1889 three other specimens were found by me near the same spot.

As regards the mountainous species *Pterostichus æthiops*, I found three specimens in 1890 in the vicinity of Stonyhurst College, which is about two miles distant from Longridge Fell (1,149 ft.) and ten miles from Pendle Hill (1,831 ft.). Dr. J.W. Ellis, who kindly examined one of the insects in question, said there could be no doubt as to its being *P. æthiops*.

NOTES—ENTOMOLOGY.

Dasycera oliviella at Kildale-in-Cleveland: a correction.—I find that the insect I recorded at the Yorkshire Naturalists' Union excursion to Kildale, 12th July, 1890, as *Dasycera oliviella* is not that species, but a female specimen of *Adela degeerella*. The much shorter antennæ of the female (of which I did not possess a specimen) in comparison with that of the male *Adela* led me into the error, which please correct in next month's 'Naturalist'.—J. GARDNER, 6, Friar Terrace, Hartlepool, 16th March, 1891.

Collix sparsata and other Lepidoptera, Neuroptera, Trichoptera, and Orthoptera, near Thorne Waste.—On July 16th last, Mr. John Harrison, of Barnsley, took a specimen of this local species in a fir wood near Thorne Waste. The species was previously only known to occur, in Yorkshire, at Askham Bogs, and there are only one or two other British localities for it—Wicken Fen being, perhaps next to Askham Bogs, the best known. The date of Mr. Harrison's capture was late for the insect, or probably more specimens would have been secured. As the food-plant (*Lysimachia vulgaris*) is plentiful, and the locality evidently a very suitable one, there is no reason why the species should not prove to be common there; still, Mr. Harrison and I, when passing over the ground, on September 13th, spent a short time in a vain search for the larvæ. Other larvæ we found abundant at Thorne on that day, a day which I may add was about the most perfect for weather we had had during the whole season. By beating birches those of *Notodonta dictæoides*, *N. dromedarius*, *N. camelina*, and *Platypteryx falcula*, were all taken in fair numbers; whilst those of *Notodonta dictæa*, both brown and green varieties, were common on aspen, on which tree those of *Acronycta megacephala* also occurred. Among Neuroptera, the Dragon-fly *Sympetrum scoticum* was in great abundance, about the broad ditches, &c., near the Waste; and the Trichoptera taken included *Limnophilus marmoratus*, *L. lunatus*, *L. auricula*, *L. flavicornis*, and *Asynarchus cœnosus*. The Orthoptera were represented by the Grasshopper *Stenobothris parallellus*, which was plentiful on the ground near the plantations bordering the 'Waste,' but did not seem to occur *on* the 'Waste.'—GEO. T. PORRITT, Huddersfield, March 5th, 1891.

ORNITHOLOGICAL NOTES FROM REDCAR for 1890-91.

THOMAS H. NELSON, M.B.O.U., Etc.,

Redcar.

Following up my notes for 1889-90, I now send my report for 1890-91. The past season has been noticeable for two, what I may term, peculiar ornithological features, viz., in August and September an unusually large flight of Pigmy Curlews, and, in the early part of the present year, most extraordinary quantities of Red-necked Grebes. With regard to the latter, I may state that since the memorable irruption of Skuas in 1879, there has not been any visit of sea-birds to equal it. One of the old fishermen, who is seventy-five years of age, and who used to be a shooter in his earlier days, told me that he did not remember ever having seen more than one or two Grebes in one day; and, although I have shot most of the different kinds of sea-fowl to be found on this coast, I have never had a chance of shooting a Grebe before. They are usually too wary to allow one to approach within range, but, as will be seen from my notes, they appeared in hundreds off Redcar in January and February, and I shot four in one afternoon. The most probable theory to account for this visitation is that, owing to the intense frost, all the lakes and streams on the Continent were frozen, and the Grebes were driven to the open sea and thence to our shores. Have any other readers of 'The Naturalist' remarked a similar increase of these birds in their localities? The occurrence of seven Wood Larks in January is also a noteworthy incident.

1890. March. The first Wheatears (*Saxicola œnanthe*) were seen on Coatham sand-hills on the 23rd. I noticed several small parties on the Redcar sand-hills on the 29th.

April. Ring Dotterels (*Ægialitis hiaticula*) commenced laying early: single eggs were found on the 4th. I saw seven new nests on the 6th; a clutch of four eggs was taken on the 19th. Great numbers of Gulls, chiefly Great and Lesser Black-backed (*Larus marinus* and *L. fuscus*), flew past during a strong N. wind on the 10th. I very much fear that the colony of Cormorants (*Phalacrocorax carbo*) at Kettleness is being broken up by the propinquity of the railway, which now passes within a few yards of the cliffs. Two or three years ago there were about thirty pairs breeding, but last season I only saw one pair in several visits, and understand that they did not nest there. It is probable they may have changed their quarters to some of the other

cliffs near Staithes. The Herring Gulls (*L. argentatus*) are as numerous as ever between Staithes and Kettleness. Several Stock Doves (*Columba œnas*) were nesting at the latter place.

JULY. A few flocks of Whimbrels (*Numenius phæopus*) appeared; these birds are always the first of the autumn immigrants to visit us.

AUGUST. Two Grey Plovers (*Squatarola helvetica*), two Pigmy Curlews (*Tringa subarquata*), and a Knot (*T. canutus*), all in perfect summer plumage, were obtained at the Tees mouth early in this month. 8th.—The first Richardson's Skua (*Stercorarius crepidatus*), an immature specimen, was shot in Tees Bay. 12th.—I observed a Sandwich Tern (*Sterna cantiaca*), and a Lesser Tern (*S. minuta*) at the Tees. Shore Birds, viz.:—Bar-tailed Godwits (*Limosa lapponica*), Redshanks (*Totanus calidris*), Turnstones (*Strepsilas interpres*), Oyster-catchers (*Hæmatopus ostralegus*), Sanderlings (*Calidris arenaria*), and Dunlins (*Tringa alpina*), were all represented, but only in small flocks. An immense flight of Pigmy Curlews, most unusual for this district, occurred this month. Small parties appear at irregular intervals, and three or four examples may be taken in a season, but, on this occasion, their numbers far exceeded anything in my experience. On the 26th, twenty-one were killed, eleven at one shot; and, from that date to the 25th September, I saw no less than one hundred and ten which were shot at or near the Tees. On their first arrival they were in flocks by themselves, and generally kept to the salt-marshes, but, after a few days, they associated with Dunlins and other small waders; those which were procured during the latter half of September were all shot by firing into mixed flocks of shore birds. The last I noticed were on the sands on the 25th September, nor did I afterwards hear of any others being observed. 29th.—I saw five Lesser Terns at the Tees mouth, and one, an immature example, was shot.

SEPTEMBER. 5th.—The first of the ordinary autumn contingent of Grey Plovers, a flock of six, passed to the N.W. while I was off in a boat about two miles N.E. of Redcar. 8th.—About a dozen young Gannets (*Sula bassana*) were in the bay, and remained for a week or two, fishing industriously amongst the herrings and sprats. 10th.—A flight of Grey Plovers, Dunlins, Sanderlings, and a few Godwits arrived at the Tees. 11th.—Great flocks of Godwits and Knots were on the Tees sands, evidently newly arrived. I made good bags of both species. 16th.—Moderate wind from E. A great many Ducks passed to the N.W. A Woodcock (*Scolopax rusticola*) flew up the sands near the fishing cobles, early in the morning. 20th.—A great passage of Ducks took place. 23rd.—At sea I observed eight Red-throated Divers (*Colymbus septentrionalis*).

26th.—There was a large arrival of Dunlins at the Tees mouth. Several immense flocks were on the sands at high tide. A few Larks (*Alauda arvensis*) and Chaffinches (*Fringilla cælebs*) were crossing, on the usual autumnal migration. 29th.—Larks crossing continually. A Honey Buzzard (*Pernis apivorus*) was shot near Whitby and sent to Mussell, the Middlesbrough taxidermist.

October. 2nd.—N. wind, moderate. Several flocks of Ducks, a Heron (*Ardea cinerea*), and three Skuas (*S. crepidatus*), passed East Scar. Larks continued to cross daily up to the 8th. 6th.—The first Short-eared Owl (*Asio accipitrinus*) was reported. 7th.—E. wind and rain. An immature Grey Phalarope (*Phalaropus fulicarius*) was shot while swimming among the breakers near Redcar Pier. 8th.—N.E. wind, moderate. A great many Ducks passed, and a Woodcock was seen on Redcar sand-hills. 9th.—S.W. wind, light. A great rush of Larks and Green Plover (*Vanellus vulgaris*). They were crossing from daylight up to noon. I noticed a white bird among a flock of Larks, which passed me on Coatham sands. 10th.—An adult Buffon's Skua (*S. parasiticus*) was picked up east of Redcar, having been killed by coming in contact with the telephone wires. The first Hooded Crows (*Corvus cornix*) of the season were seen to-day. This is about a week later than the average date of their appearance. 10th to 14th.—Larks were crossing daily, and Ducks were reported on migration by the fishermen. 13th.—Guillemots (*Lomvia troile*) and Razor-bills (*Alca torda*) were passing to the E. in flocks during the early morning. A few Terns, Gannets, and Skuas were still in the Bay. 15th.—I saw six Shore Larks (*Otocorys alpestris*) on East Scar, and a friend who was with me shot two, both fine adult birds. 17th.—Strong N.W. gale. Two Snipe (*Gallinago cælestis*) came from seaward over East Scar. 18th.—N. gale, with rain. Many flocks of Ducks passed. I shot an immature Long-tailed Duck (*Harelda glacialis*) near East Scar, and another similar example was shot by a fisherman. A Goosander (*Mergus merganser*) and three small flocks of Pomatorhine Skuas (*S. pomatorhinus*), flew past to the N.W. 19th.—N.E. gale, and rain. Ducks still passing. I saw five Shore Larks. 20th.—S.W., light; rain. A great many Dunlins and several flocks of Ducks passed. 21st.—S.W., light. A few Larks and Hooded Crows came over. 22nd.—Calm, hazy. A rush of Hooded Crows, Larks, and Green Plover. Three Shore Larks were shot. I was off in a boat to the east of Redcar, and shot an adult Red-throated Diver, with traces of the red plumage on the throat, and an adult Long-tailed Drake. 23rd.—S.W., light. A few Larks and Hooded Crows crossed daily from this date to the end of the month. I walked within a few yards of

a Shore Lark and an immature Arctic Tern (*S. macrura*) by the edge of the water. 24th.—S.W. wind, moderate. Many Hooded Crows and Larks migrating. Two immature Velvet Scoters (*Œdemia fusca*) were shot east of Redcar. 25th.—A large Hawk, probably a Peregrine Falcon, carrying a bird in its talons, came from seaward at 10.30 a.m., flying S.W. It dropped the bird on the water near Redcar Pier, and passed on up the sands about two hundred yards away. A Kestrel (*Falco tinnunculus*) crossed, from over the sea, at noon. 26th.—N.E. gale. A large number of Skuas flew past to the N.W. 28th.—N.W. gale. Two immature Long-tailed Ducks were shot. 29th.—Gale continuing. A Little Grebe (*Podiceps fluviatilis*) was picked up alive on Coatham sands, and a Woodcock was shot on the sand-hills. 30th.—While looking through the telescope at the Lifeboat look-out, I distinctly saw a Great Northern Diver (*C. glacialis*), swimming and diving near West Scar. After some delay we launched a boat, but could not then see anything of the bird. On the 8th of November a very fine adult male example of this species was shot inside the rocks, and this, probably, was the same individual which I had observed.

NOVEMBER. 1st to 15th.—S.W. light winds. A few Hooded Crows and Larks crossed daily. 18th.—S.W. light, hazy. A large flight of Green Plover came over. 24th.—N. wind, strong, rain. Two Shore Larks were shot on the sands E. of Redcar. Several flocks of Ducks passed. 25th.—N.E. gale, snow and hail showers. A great rush of Ducks; also a good many Snow Buntings (*Plectrophanes nivalis*). 27th to 29th.—E. gales, and snow. A great many Ducks, Dunlins, Larks, and Snow Buntings passed.

DECEMBER. 1st.—An adult male Black-throated Diver (*C. arcticus*), in almost perfect summer plumage, was shot within twenty yards of the beach, opposite Redcar. This is the first specimen, in full plumage, which I have known here. 2nd.—While off in a boat I saw two Great Northern Divers and a large Grebe, but could not get within shot of them. 16th.—E. gale; and 19th—S. moderate wind. A few flocks of Ducks passed. 20th—An intense frost. Three Swans flew past to the N.W. Thousands of Wood-pigeons (*C. palumbus*) congregated in the fields E. of Redcar, feeding on the bean-stubbles. All the pools and water-courses on the marshes were frozen hard. 22nd.—A Spotted Crake (*Porzana maruetta*) was captured alive, in a ditch, near Redcar. 27th.—Two Swans were on West Scar early in the morning; five others were seen at the Tees mouth. Many hundreds of Black-headed Gulls (*L. ridibundus*) assembled on the shore during the severe weather in this month. 31st.—A Little Auk (*Mergulus alle*) was picked up on

the shore. Unusual quantities of Scaups (*Fuligula marila*) were obtained during December and January; many of them being drakes in perfect plumage. The old wildfowlers say that, 40 or 50 years ago, these birds were numerous every winter, and they hardly considered them worth shooting, but they are by no means common now.

1891. JANUARY. 7th.—A Whooper (*Cygnus musicus*) was shot near Stockton-on-Tees. Several Swans were killed by a puntsman, on the Tees, in December and January. 8th.—Hard frost. A great rush of Larks (*A. arvensis*) took place, all flying to the N.W. 9th.—Fine, S.W. light wind. Three Swans passed, about half-a-mile off at sea, flying N.W. I do not think we had such severe frosts as were experienced in places further South, nor was there much snow. The little which did fall quickly melted on the coast-line, and throngs of Fieldfares (*T. pilaris*), Redwings (*T. iliacus*), Larks, Thrushes (*T. musicus*), and other small birds came down to the sands and fields near the shore, but the ground was frozen so hard that they could find but little sustenance, and many perished from starvation. 16th.—My attention was attracted by the notes of some birds of the Lark tribe, at high-water mark, near the sand-hills; on shooting one I saw it was a 'stranger,' and forwarded it to Mr. W. Eagle Clarke; however, I afterwards procured two more, and then, by the aid of Mr. Saunders' 'Manual' discovered they were Wood Larks (*Alauda arborea*). Probably they comprised a family party, for there were only seven altogether. These are the first I have met with, and it is, surely, an extraordinary time and place for birds of their nature. A local taxidermist, who has been in the habit of snaring song-birds ever since he was a boy, informs me that although he has often looked for the Wood Lark he never saw one until this winter; and Mussell has had only one specimen through his hands in the course of the past 35 years. 19th.—A Scaup Drake swimming near the shore induced me to take a boat and go in pursuit; I winged the Drake, but it escaped, by diving, at the time, although I secured it afterwards. I then shot a strange-looking bird, which was flying past, and which proved to be a Great Crested Grebe (*P. cristatus*), and shortly after obtained three Red-necked Grebes (*P. griseigena*), besides seeing eight or ten others, and a Great Northern Diver, which I could not follow, owing to the cold snow showers and darkness coming on. Two fishermen, who had heard me shooting, put off in their boat, and shot a Mute Swan (*C. olor*) and three Red-necked Grebes. They told me they had seen at least twenty. The weather became too rough for boating for some days after the 19th; between that date and the 27th the fishermen reported most surprising quantities of Grebes at sea; there must have been some hundreds

between the Tees Mouth and Huntcliffe; two were picked up alive on the beach, having been driven ashore by the rough seas. 27th.—Two Red-necked Grebes and an immature Black-throated Diver were shot early in the morning. I went off about ten o'clock, and obtained another specimen of *P. griseigena*; we saw several more, but the wind rose and obliged us to come ashore. A few Green Plover and Larks came over. Wind strong from S.W.

FEBRUARY. 7th.—Another Red-necked Grebe was shot, and other four and a Great Northern Diver observed, early in the morning. 12th.—N. gale; rough sea. Three Grebes were swimming near the shore at low tide, under the shelter of West Scar. 14th.—I went up into the look-out at the Life-boat Station, to see if there were any birds on the water, and discovered two splendid adult Long-tailed Drakes, swimming and diving near Salt Scar, and a Grebe near West Scar. 16th.—Two Grebes were inside the rocks. 17th.—An immature Black-throated Diver and a Glaucous Gull (*L. glaucus*) were shot from a boat between Redcar and Marske. 25th.—A wounded Grey-Lag Goose (*Anser cinereus*) was brought in by one of the fishing cobles. A Lark came over the sea at 1 p.m. The weather during the last week of this month was calm and foggy; the sea perfectly smooth. On the 27th I observed a Red-throated Diver (*Colymbus septentrionalis*) within two yards of the shore, near East Scar; at one time when it dived there must have been barely water enough to cover its back.

NOTE—FISHES.

Abundance of Haddocks off the coast of Redcar.—It may be desirable to place upon record the fact that an immense shoal of Haddocks suddenly appeared on the N.E. coast in the month of January last; for the space of three weeks the cobles had splendid catches, varying from 10 to 30 score, all fine well-fed fish, ranging from 3 lbs. to 8 lbs. in weight. From all parts of the coast of Yorkshire, and northward into Scotland, came reports of these fish being taken in unusual numbers, but they disappeared just as mysteriously as they came. The old fishermen say they never remember such a quantity of Haddocks (*Gadus æglefinus*) at that time of the year.—T. H. NELSON, Redcar, 26th February, 1891.

NOTE—HYMENOPTERA.

Preponderance of the Female in Sirex.—On several occasions I have had *Sirex gigas* brought to me living and dead, and once I caught it flying in our market-place. I have also had *Sirex juvencus* given to me alive, but all these creatures were females. I also find that in most Natural History books where there is a figure of this creature, it is the female. I come, therefore, to the conclusion that the male is rarely seen. I was, therefore, greatly pleased last August when my sister sent me a male which was caught flying in her drawing-room. I find there is a good figure in Newman's History of Insects.—F. GEORGE, Kirton-in-Lindsey, January 17th, 1891.

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PHANEROGAMIC BOTANY, 1887.

THE present instalment comprises the record of botanical activity in the North of England for a single year, so far as concerns the plants included in the London Catalogue of British Plants. Previous instalments of the botanical bibliography have been published in 'The Naturalist' as follows:—For 1884, Nat., Sep. 1885, pp. 331-336; for 1885, Nat., June 1886, pp. 174-179; and for 1886, Nat., Dec. 1890, pp. 359-374.

The counties included are the Watsonian vice-counties of Cheviotland, Northumberland S., Durham, York N.W., N.E., Mid W., S.W., and S.E., Linc. N. and S., Notts., Derby, Cheshire, Lanc. S. and W., Westmorland with Furness, Cumberland, and Isle of Man.

ANON. [signed 'J.C.S., Penrith']. **Derbyshire, Cumberland.**

Tussilago Petasites [at Buxton with flower stems quite 2-3 ft. high, whilst never more than a foot in Cumberland; *Mimulus luteus* noted as on the banks of many mountain streams, and growing by the roadside on Hartside Fell (Pennine Range), nearly 2,000 ft. alt.]. Sci. Goss., Jan. 1887, p. 20.

ANON. [not signed]. **York S.W.**

Calder-Vale Words [as used from Wakefield upwards; Caise = kecks, umbelliferous plants (*Chærophyllum sylvestre*, etc.); Cat nut, hairy nut = earth nut (*Bunium flexuosum*); Cleats = Foal- or Colt's foot (*Tussilago farfara*)—from which is made wine to purify the blood; Colon = stalks of furze (*Ulex europæus*); Cresh = water cress (*Nasturtium officinale*); Daffy dahn dilly = daffodil (*Narcissus pseudo-narcissus*); Dee-nettles = stingless nettles (*Lamium*); Dockens = docks (*Rumex* sp.), see remarks; Dog-daisy = the large-flowered wild daisy (*Chrysanthemum leucanthemum*), see remarks; Esh (Saxon, Esche) = Ash tree (*Fraxinus*); Espin = Aspin leaf (*Populus tremula*)]. Yorksh. Folk-Lore Journ., Parts 7 and 8, Jan. and Ap. 1887, pp. 109-115.

ANON. [not signed]. **York S.W.**

Excursion [of **Wesley Scientific Society**] **to Roche Abbey** [May 12th, 1887; *Gagea lutea*, *Helleborus viridis*, *Potentilla verna* noted]. Wesl. Nat., June 1887, i. 127.

ANON. [signed 'E.C.']. **Derbyshire.**

Helianthus annuus [established itself in 1886 on the ancient arch of Repton School]. Sci. Goss., Aug. 1887, p. 190.

ANON. [not signed]. **York S.W.**

Ackworth Reports.—Natural History Society [noting that three Cambridgeshire roots of *Anemone pulsatilla* have been planted on the Danish Camp, Went Vale; large bed of *Epilobium tetragonum* found at Norwood near Hemsworth; and doubt expressed as to the Brierley Common record of *Eriophorum gracile*]. Nat. Hist. Journ., Sep. 15th, 1887, xi. 128.

ANON. [not signed]. **North of England generally.**

Floral Calendar, 1878-1887 [a table of mean dates for 31 selected plants, for each year, and for the whole decade]. N. H. J., Nov. 15th, 1887, xi. 191.

ANON. [not signed]. **York N.E., S.E., and Mid W.**

A 'Rosette' Geum (*G. rivale*, Water Avens) [at Rievaulx, 7th June, 1887; also at Kirkham and Settle; full description of the sport given]. Nat. Hist. Journ., Dec. 15th, 1887, xi. 211.

R. ADKIN. **Westmorland or Furness.**

[Impatiens noli-me-tangere near Windermere; very local]. Trans. Ent. Soc., Dec. 1st, 1886, p. lvi; Zool., Jan. 1887, xi. 34; Ent. Mo. Mag., Jan. 1887, xxiii. 192; Ent., Jan. 1887, xx. 20; Young Nat., Jan. 1887, viii. 13; and Nat., March 1887, p. 69.

OLIVER V. APLIN. **Notts.**

A Visit to Rainworth Lodge [in April, 1886; *Drosera rotundifolia* and *Erica tetralix* noted]. Nat., July 1887, p. 197.

F. H. ARNOLD. **Derbyshire.**

Notes on the Mistletoe [(*Viscum album*); on oak at Staveley, Derbyshire, latter half of the 17th century; said to be 'the only oake in England that bears Mistletoe']. Nat. Monthly, Dec. 1887, p. 65.

CHARLES C. BABINGTON. **York S.W.**

Supplement to Notes on Rubi.—No. 1. [*Rubus newbouldii* described as new from plant found by Mr. Newbould at Loxley, near Sheffield, in 1846]. Journ. of Bot., Jan. 1887, xxv. 20-23.

CHARLES C. BABINGTON. **Cumberland, York N.E., Northumberland S.**

Supplement to Notes on Rubi.—No. 2. [Critical notes on the Genus in Britain and on the Continent, with reference to 'Pt. I. Comparative Examination of the Rubi in the Scandinavian Peninsula,' by F. W. C. Areschoug, Ph.D., Professor in the University of Lund, 1885-86, and stating that *Rubus Münteri* Marss., gathered at Keswick by Dr. Hort, and *R. Maassii* Focke are probably the British representatives of *R. polyanthemos* Lindb., said to be the 'most vigorous of all the Scandinavian brambles,' although Areschoug considers it to be the English *R. umbrosus* (the *R. carpinifolius* of Bloxam); a specimen in Génévier's herbarium, with the name of *R. nemoralis* Müll., is cited, gathered by J. G. Baker at Thirsk, Aug. 1865, and at Hartley Links, Northumberland, Aug. 1862, the latter specimen being in the possession of Prof. Babington himself]. Journ. of Bot., Nov. 1887, xxv. 327-333.

CHARLES BAILEY. **Lanc. S.**

On the Structure, the Occurrence in Lancashire, and the probable Source, of Naias graminea, Delile, **var. Delilei**, Magnus [for abstract of this paper, which also appeared in Journ. of Bot., Oct. 1884, see Bibliography in The Naturalist, Sep. 1885, p. 331]. Memoirs of Manch. Lit. & Phil. Soc., Third Series, Tenth Vol., 1887, pp. 29-75, with 4 plates and numerous woodcuts.

CHARLES BAILEY. **Cheshire, Lanc. S., Westmorland, Cumberland, Yorkshire.**

Forms and Allies of Ranunculus Flammula Linn. [discussed in detail, with frequent references to the forms and distribution about Manchester of *R. flammula*, *R. lingua*, and the Ullswater locality for *R. reptans* stated with some detail]. Journ. of Bot., May 1887, xxv. 135-138.

CHARLES BAILEY. **Lancs. S. and W., Furness, Westmld., Cheshire, Derbyshire, York Mid W. and S.W.**

The Botany of the [Manchester] District [dealing firstly with the influence of town-growth on plant-life, the introduction of plants with cotton, and then fully enumerating the plants of the district in brief and readable form; the 'district' is wide, reaching far into Furness, Derbyshire, and Yorkshire]. Handbook of Manchester.—Prepared by the Local Committee for the Members of the British Assoc. at the Manchester Meeting, 1887, pp. 27-42. The Excursion Programme, No. 4, G, Delamere for Oakmere, by Charles Bailey, also contains notes on the plants of Oakmere; and No. 11, T, contains notes on the plants of Craven.

ARTHUR BENNETT. **Lanc. S.**

Two new forms of Grasses for Britain [one being *Agrostis alba* var. *subjungens* Hackel, Southport, on sandy ground, July 1884, F. C. King]. Journ. of Bot., March 1887, xxv. 84.

A. BENNETT. **York N.E.**

Calamagrostis stricta Nutt. **in Yorkshire** [at Castle Howard Woods, July 1844, collected by H. Ibbotson; now in F. J. Hanbury's herbarium]. Nat., July 1887, p. 201.

ARTHUR BENNETT. **Yorkshire.**

Rhynchospora fusca R. et S. in Scotland [sent by J. McAndrew, gathered in 1882, and till now unnamed; formerly reported from Yorkshire, although its most northern English station is believed to be Cardigan]. Journ. of Bot., Dec. 1887, xxv. 373.

WILLIAM D. BRAITHWAITE, Secretary. **York S.W.**

Ackworth School Natural History Society [two specimens of *Anemone pulsatilla* found at the Danish Camp, March 1887; *Daphne mezereon*, Brockendale, and *D. laureola*, near Hampole, several places, noted]. Nat. Hist. Journ., May 16th, 1887, xi. 80.

W. D. BRAITHWAITE, Secretary. **York S.W.**

Ackworth Natural History Society [*Eranthis hyemalis* in Owston Park, in fruit, follicles open, 26th May, 1887]. N. H. J., June 15th, 1887, xi. 106.

W. D. BRAITHWAITE, Secy. **York S.W.**

Ackworth School Natural History Society [*Scutellaria minor*, Brierley Common, added to district records]. N. H. Journ., Sep. 15th, 1887, xi. 130.

ROBERT BROWN. **Cheshire, Lanc. S., Isle of Man.**

Botanical Résumé [of observations made at Excursions of the Liverpool N.F.C. in 1886, at Backford, Cheshire, 1st May, Rivington, Lancashire, 24th June, Heswall and Thurstaston, Cheshire, 10th July, and Wallasey sand-hills, 2nd October; with notes on *Brassica monensis* in the Isle of Man and the appearance at Leasowe of *Cotula coronopifolia*]. Proc. Liverp. Nat. Field Club for 1886-87 (publ. 1887), pp. 55-62.

ROBERT BROWN. **Cheshire, Lanc. S.**

Names of Some of the most Interesting Plants noticed during the [Liverpool Field Club] Excursions in 1886 [enumerating 10 species for Backford, Cheshire, 1st May, 12 for Heapy and Rivington, 24th June, 20 for Heswall and Thurstaston, Cheshire. 10th July, and 17 for Wallasey sand-hills, 2nd October]. Proc. Liverp. Nat. F. Club for 1886-87 (publ. 1887), pp. 65-68.

ROBERT BROWN. **Lanc. S., Cheshire.**

Third Appendix to the Flora of Liverpool [stations given for about 170 species, of which several are additional to the district, viz., *Elatine hexandra*, *Campanula rapunculoides*, *Cuscuta epilinum*, *Ruscus aculeatus*, *Chara syncarpa*, and *Cotula coronopifolia*, an escape from cultivation]. Proc. Liverp. Nat. F. Club for 1886-87 (publ. 1887), pp. 17-44 (and pp. 1-30 of rep.).

JAMES CASH. **Lanc. S., York S.W., Cumbld., Chesh., Derbysh.**

The Early Botanical Work of the late William Wilson [in York S.W., where, at Greenfield, he found *Hymenophyllum tunbridgense* and *H. wilsoni*, *Myosotis repens*, *Gnaphalium dioicum*, *Salix lanata*, *Rubus chamaemorus*, *Lycopodium alpinum*, and *Arbutus uva-ursi*; the latter also at Kinderscout and Staley Brushes, *Lathraea* in Longdendale and at Eccles, *Draba verna* and *Polemonium* at Buxton, *Mentha rubra*, *M. viridis* and *M. piperita*, *Verbascum nigrum*, *Polemonium*, *Galeopsis ladanum*, and a new *Carduus* in Dovedale]. Nat., June 1887, pp. 181-190.

JAMES CLARK. **Cumberland.**

Monstrosities . . . White Valerian [*Valeriana officinalis*, at Allonby, Cumberland]. Nat. Hist. Journ., Dec. 15th, 1887, xi. 212.

J. E. CLARK. **Cumberland, York N.E.**

Abnormal Plantains [monstrosities of *Plantago major* at Whitehaven, and of *P. lanceolata* at Ayton and York, described]. Nat. Hist. Journ., Dec. 15th, 1887, xi. 212.

J. E. C[LARK]. **Cumberland.**

White [variety of] Sea Pink (*Armeria maritima*) [in considerable abundance between Allonby and Maryport; white *Geranium pratense* also noted]. Nat. Hist. Journ., Dec. 15th, 1887, xi. 212.

C. DE VIT. **York N.E.**

Rose-coloured [variety of] 'Blue-Bells' (*Scilla nutans*).—Near Ayton, June, 1887. Nat. Hist. Journ., Dec. 15th, 1887, xi. 212.

ED[ITOR]S. [OF NAT. HIST. JOURNAL]. **York Mid W. and S.W.**

[Foot-note to] Some Botanical Outlaws [that fields of Teasel (*Dipsacus fullonum*) are still grown around Church Fenton in Yorkshire; also that they remember a field of it near Ackworth]. N. H. J., June 15th, 1887, xi. 96.

T. W. EDMONDSON. **York S.W. and Mid W.**

Bee Orchis [*Ophrys apifera*] **in Craven** [one, July 24th, 1886, between Stirton and Gargrave; fairly common round Skipton some twenty years ago, but of late years lost sight of]. Nat., Jan. 1887, p. 22.

JOHN W. ELLIS. **Cheshire.**

[Rosa spinosissima on Wallasey sand-hills]. Sci. Goss., April 1887, p. 93.

D. EMBLETON. **Northumb. S., Durham, Westmld., York N.W. and N.E.**

A Catalogue of the Place-names in Teesdale [including some derived from the Oak, Birch, Willow, Holly, Mulberry, Wheat, Bere, Burdock, Raspberry, Daisy, Lily, Primrose, Ling, and Bracken; see p. xiii, 7 and 14 (*Rubus chamæmorus*), 9 (*Vaccinium myrtillus*), 10 (Alder, Oak), 11 (*Pyrus aucuparia*), 12 (*Pteris*), 12 (Dock), 12 (Cherry), 14 (Barley), 14 (*Rubus*), 14 (*Prunus padus*), 15 (*Crataegus* or *Prunus spinosa*), 15 (*Betula*), 25 (Corncockle or Darnel), 51 (Barley), 53 (Birch), 61 (Ash), 75 (Hazel), 76 (Ash), 77 (Willow), 87 (Birch), 88 (Willow), 96 (Lily, Daisy, Primrose), 96 (Rasp), 96 (Seavy or Rush), 97 (Holly), 99 (Bracken), 103 (Birch), 106 (*Myrica gale* and *Angelica archangelica*), 124 (Ling = *Calluna*, etc., and *Scirpus cæspitosus*, *Elymus arenarius*, *Erica tetralix*, and *E. 'cinerea'*), 138 (Barley), 151 (Nettles), 153 (Raspberry), 157 (Apple, Hazel), 160 (Willow and *Convallaria polygonatum*), 160 (Seavy = rush or sedge, *Juncus effusus*, *J. conglomeratus*, *Scirpus lacustris* mentioned), 167 (Holly), 169 (Seavy or Rush), 169 (Hazel), 177 (Oak), 185 (Bracken), 203 (Bere or Barley), 211 (Apple)]. Nat. Hist. Trans. of Northumb. Durh. and Newc., vol. ix. part i. (1887), pp. i-xviii. and 1-223.

WILLIAM FOWLER. **Linc. N. and S.**

Lincolnshire Bog and Moorland Plants [enumerated to the number of 72, with occasional annotations, and preceded by remarks on the extinction and decrease of bog plants]. Nat., Nov. 1887, pp. 349-351.

HILDERIC FRIEND. **Notts.**

[Senecio lividus Smith; a patch between Ollerton and Rufford Abbey, infested profusely by] *Coleosporium Senecionis*, Fr. [in mid-Aug. 1887]. Nat. Monthly, Oct. 1887, p. 39.

HILDERIC FRIEND. **Cumberland.**

Spergula pentandra L. [at Carlisle, by the Eden, in fruit, Sep. 2nd, 1887]. Sci. Goss., Oct. 1887, p. 235.

F. J. GEORGE. **Lanc. S.**

Floral Malformation [in *Digitalis purpurea* at Rivington]. Sci. Goss., Sep. 1887, p. 214.

C. S. GREGSON. **Isle of Man.**

Notes on Isle of Man Captures in June [an entomological paper, with incidental notices of *Silene maritima* and *Cochlearia danica*]. Young Nat., July 1887, viii. 138.

C. S. GREGSON. **Isle of Man.**

A Day's "Scientific" Insect-Hunting on the Isle of Man in June [with casual references to *Rosa spinosissima*, *Thymus serpyllum*, *Lotus corniculatus*, *Statice armeria*, *Silene maritima*, *Plantago maritima*, *Poa cæspitosa*, *P. cærulea*, *Aira cæspitosa*, *Holcus mollis*, *Dactylis glomerata*, *Conium maculatum*, *Althæa officinalis*, and *Malva sylvestris*]. Young Nat., Aug. 1887, viii. 153-155.

C. S. GREGSON and G. ROSE. **York S.W.**

[Impatiens noli-me-tangere in Wharncliffe Wood, just coming into flower, August 1887]. Young Nat., Oct. 1887, viii. 194.

W. B. GROVE. **York N.E.**

Barbarea stricta and Alopecurus bulbosus, two rather rare plants, from Clifton Ings, Yorkshire. Midl. Nat., Aug. 1887, x. 215.

H. and J. GROVES. **York N.E.**

Notes on British Characeæ for 1886 [the only North of England record is *Chara vulgaris* var. *longibracteata*, York N.E., W. W. Reeves; locality not further indicated]. Journ. Bot., May 1887, xxv. 146.

JAMES GROVES [Editor]. **Furness, Cumbld., Chevld., Chesh., Lancs. S.**

Extracts from Report of Botanical Exchange Club for 1885 [*Ranunculus flammula* var. *pseudo-reptans* E.B., Furness and Cumberland: *Euphrasia officinalis*, *pratensis* Fr., Cheviotland; *Zannichellia pedicellata* Fries., Cheshire; and *Naias graminea* Del. var. *delilei* Magnus, S. Lancashire]. Journ. of Bot., March 1887, xxv. 86-89.

J. T. GUMERSALL. **Cumberland.**

[Plants at] Seascale, (Cumb.) [*Radiola linoides*; *Saxifraga umbrosa* (head of Stanley Ghyll); *Scutellaria minor*; and *Ceterach*]. Nat. Hist. Journ., Dec. 15th, 1887, xi. 211.

J. HAGGER. **Derbyshire.**

The Leafing of the Oak [*Quercus robur*] **and Ash** [*Fraxinus excelsior*; discussion based on Burton-on-Trent experience]. Nat., Dec. 1887, 365-366.

ALLAN B. HALL. **York N.E.**

Unusual Flowering [of *Primula vulgaris* below Whitstonecliff, Thirsk, Dec. 18th, 1886]. Nat. Hist. Journ., March 15th, 1887, xi. 37.

ALLAN B. HALL. **York N.E.**

[Plants at] Thirsk [*Arabis perfoliata*, *Stellaria glauca*, *Cnicus eriophorus*, *C. pratensis*, *C. acaulis* (near Rievaulx, new to N.E. York), *Lysimachia thyrsiflora*, *Cuscuta trifolii*, *Limosella aquatica*, *Hydrocharis morsus-ranæ*, *Acorus calamus*, *Scirpus caricis*, and *Carex stricta*; no details given but census-numbers]. Nat. Hist. Journ., Dec. 15th, 1887, xi. 211.

JAMES HARDY. **Northumberland.**

Report of Meetings of the Berwickshire Naturalists' Club, for the year 1886 [*Fedia olitoria*, *Ranunculus ficaria*, *Doronicum pardalianches*, *Chenopodium bonus-henricus*, and *Ægopodium podagraria* noted at Woodhorn, 26th May]. Proc. Berw. Nat. Club for 1886 (pub. 1887), xi. 336 and 337.

J[AMES]. H[ARDY]. **Cheviotland.**

Localities for Neottia Nidus-avis [Twizell Dean, and Cawledge Woods near Alnwick]. Proc. Berw. Nat. Club for 1886 (pub. 1887), xi. 533.

W. HY. HEATHCOTE. **Lanc. S.**

Lancashire Notes [*Nuphar lutea* at Tarleton near Preston]. Nat. World, March 1887, iv. 58.

W. C. HEY. **York N.E.**

The River Foss [and its water-plants; Bulrush (*Scirpus lacustris*), Yellow Water-lily (*Nuphar lutea*), White Water-Lily (*Nymphæa alba*), Arrowhead (*Sagittaria sagittifolia*), *Butomus umbellatus*, *Sium latifolium*, and *Œnanthe phellandrium*]. Nat. World, Feb. 1887, iv. 22-23.

J. F. HILLS, Secretary. **York Mid W.**

York, Bootham. Natural History Club [Water Avens (*Geum rivale*) noted at Fountains Abbey, April 9th, by W. H. Satterthwaite]. Nat. Hist. Journ., May 16th, 1887, xi. 82.

J. F. HILLS [, Secretary]. **York N.E.**

York, Bootham. Natural History Club [Bog Bean (*Menyanthes trifoliata*) at Gormire near Thirsk]. Nat. Hist. Journ., June 15th, 1887, xi. 108.

J. F. HILLS [, Secretary]. **York N.E.**

York, Bootham. Natural History Society [*Ophrys muscifera* (one only), *Primula farinosa*, *Pinguicula*, and *Lathræa*, Rievaulx Abbey, June 7th, 1887 (H. S. Thompson); *Menyanthes trifoliata* and *Hottonia palustris* abundant at or near Gormire, 13th June; *Equisetum telmateia*, *Carex pendula*, *C. sylvatica*, *Tussilago*, *Salvia verbenaca*, and *Polystichum angulare* at Whitby; *Trollius* near Levisham]. Nat. Hist. Journ., Sep. 15th, 1887, xi. 132.

BERNARD HOBSON. **Cheshire.**

Seedlings of Heracleum [sphondylium at Northenden near Manchester, April 29th, 1887, in which the fruit (cremocarp) still adhered to one of the cotyledons; described and figured]. Sci. Goss., July 1887, p. 165 and woodcut (fig. 84).

W. HODGSON. **Cumberland.**

Carex pendula in Cumberland [on the river Lyne near Shanks Castle, July 1887; localities given also for *Carduus heterophyllus* and *Equisetum maximum*]. Nat., Dec. 1887, p. 364.

J. JACKSON. **York Mid W.**

The Fly Orchis [*Ophrys muscifera*] **near Wetherby** [in West Woods, June 1887, with *Aquilegia*, *Berberis*, *Rhamnus catharticus*, *Euonymus*, *Thalictrum flexuosum*, *Melica nutans*, white *Scilla nutans*, and *Polygala vulgaris*]. Nat., July 1887, p. 208.

JOHN JACKSON. **York Mid W.**

Twiggy Mullein (*Verbascum virgatum*) **at Wetherby** [growing in a gravel-pit; queries as to origin]. Nat., Nov. 1887, p. 351.

J. A. JACKSON. **Lanc. W.**

Notes on the Black-headed Gull near Garstang [and on the vegetation of the 'Gull Moss,' viz. *Calluna*, *Erica*, *Vaccinium oxycoccus*, *Drosera rotundifolia*, *D. intermedia*, *Andromeda*, and *Myrica*]. Nat., May 1887, p. 130.

A. J. JUKES-BROWNE. **Linc. N.**

The Geology of Part of East Lincolnshire, including the country near the towns of Louth, Alford, and Spilsby [at p. 111 referring to the service rendered by *Arundo arenaria*, *Hordeum maritimum*, *Triticum junceum*, *Hippophaë rhamnoides* and *Rubus cæsius*, in holding together the sand-hills on the coast]. Memoirs of the Geol. Survey of England and Wales, 1887, pp. 111-112.

P. Q. KEEGAN. **Cumberland, Westmorland, Furness.**

The Minerals and Flowers of the English Lake District [numerous plants enumerated]. Sci. Goss., Jan. 1887, pp. 1-4.

H. WALLIS KEW. **Linc. N.**

Natural History Rambles. No. 1.—In the Woods [near Louth; notes on *Chelidonium majus*, *Malva moschata*, *Lonicera*, *Agrimonia eupatoria*, *Ranunculus flammula*, *Mentha aquatica*, and *Lysimachia nummularia*]. Sci. Goss., Feb. 1887, p. 31.

J. LARDER. **Linc. N.**

A Strip of Lincolnshire Coast [Mablethorpe; *Ammophila arenaria*, *Hippophaë rhamnoides*, *Calystegia soldanella*, *Trifolium arvense*, *Senecio jacobæa*, *Draba verna*, *Cynoglossum officinale*, *Rubus cæsius*, *Malva*, *Cakile maritima*,

Sedum, *Erodium cicutarium*, *Fœdia olitoria*, *Armoracia rusticana*, *Eryngium maritimum*, *Arenaria peploides*, *Plantago coronopus*, *Cardamine amara*, *Glaucium luteum*, *Armeria maritima*, and *Salicornia herbacea*; remains of old forest also noted]. Wesl. Nat., Nov. 1887, i. 283.

F. T. Law. **Lanc. S.**

Our British Wild Flowers ['on the Lancashire coast grows the tall, golden-flowered Common Evening Primrose' (*Œnothera biennis*)]. Wesl. Nat., Dec. 1887, i. 313.

P. Fox Lee. **Westmld., Chesh., Lancash., Cumbld., Derby, Durham, York S.W., N.E., Mid W.**

The Watson Botanical Exchange Club [numerous records of critical plants for the counties enumerated above]. Third Annual Report (1886-7), pp. 1-16.

P. Fox Lee. **York S.W.**

Rubus podophyllus in England [near Dewsbury; along with *R. lejeunei* var. aff. *festivus*; determined by C. C. Babington; description given]. Nat., Sep. 1887, p. 277.

F. Arnold Lees. **York N.E.**

Yorkshire Naturalists at Gormire Lake and Thirkleby Park [with notes on *Potentilla argentea* (new to N.E. Yorksh.), *Veronica parmularia*, *V. scutellata*, *Rubus bakeri* (new name), *R. nitidus*, *R. lindleianus*, *Chara fœtida* v. *atrovirens*, *Typha angustifolia*, *Carex vesicaria*, *Pyrus communis*, *Hypericum humifusum*, *Erythræa centaurium*, *Scolopendium vulgare*, *Diplotaxis muralis*, *D. babingtonii*, and *D. tenuifolia*]. Nat., Aug. 1887, pp. 238-239.

F. Arnold Lees. **Chesh., York N.E., S.W., and Mid W.**

Botanical Notes from North-East Yorkshire [mentioning *Carduus acaulis* from the moor near Rievaulx Abbey, a new record for vice-county 62, and doubting the reputed discovery at Castle Howard of *Calamagrostis stricta*, all recently gathered specimens in that district being proved to be only *C. lanceolata*]. Nat., Sep. 1887, pp. 273-274.

F. Arnold Lees. **York N.W., Westmorland.**

Yorkshire and Westmorland Naturalists at Sedbergh [Aug. 1st, 1887; detailed notes of interest on the observations made, on *Meum athamanticum*, *Hypericum dubium*, *Hieracium crocatum*, *H. cæsium*, *Rosa spinosissima*, *Galium boreale*, *Sedum anglicum*, *Circæa alpina*, *Hieracium umbellatum*, *H. pallidum*, *Polygonum viviparum*, *Equisetum variegatum*, *Prunus padus*, *Rosa mollis*, *Geranium sylvaticum*, *Linaria minor* (*viscida*), *Epilobium alsinifolium* and its var. *anceps*, *Hieracium tridentatum*, *Alchemilla alpina*, *Saxifraga stellaris*, *S. aizoides*, *Circæa alpina*, *Ceterach officinarum* (in Westmorland, on the boundary) and *Hymenophyllum unilaterale*]. Nat., Sep. 1887, pp. 277-281.

R. Lofthouse. **Durham, York N.E.**

The River Tees: its Marshes and their Fauna [with a reference to a gigantic tree (oak?) dredged from the river, now in the Middlesbrough Park; and to *Statice limonium* on south side of Tees]. Nat., Jan. 1887, 1-16.

P. W. Maclagan. **Cheviotland.**

Linaria minor in Northumberland [at Beal Station, on railway tracks; inquiry as to the connection of this plant with such stations]. Nat., Oct. 1887, p. 294.

P. W. Maclagan. **Cheviotland.**

Threatened Extinction of Sisymbrium Irio at Berwick-on-Tweed [in Ray's 1671 station; caused by 'pointing' the walls on which it grows]. Nat., Oct. 1887, p. 294.

J. Cosmo Melvill. **Lanc. S.**

[**Deschampsia flexuosa grows abundantly** on Kersal Moor, Manchester]. Proc. Manch. Lit. & Phil. Soc., Feb. 14, 1887, xxvi. 116.

ROBERT MIDDLEMAS. **Northumberland S.**

Address delivered to the Berwickshire Naturalists' Club, at Alnwick, October 14th, 1886 [*Ranunculus aquatilis* and *Scilla nutans* noted at Cresswell, *Doronicum pardalianches* at Newbiggin]. Proc. Berw. Nat. Club for 1886 [pub. 1887], xi. 324 and 325.

F. T. MOTT. **York Mid W.**

[Asplenium viride from the Craven Hills, Yorks., exhibited to Leicester Lit. and Phil. Soc., Sep. 21st, 1887]. Midl. Nat., Oct. 1887, p. 268.

JOHN J. OGLE. **Notts.**

Monstrous Flowers of Elm [remarks on abnormal flowers of elm trees on the Mansfield Road, Notts.]. Journ. of Bot., Aug. 1887, xxv. 247-8.

H. PEARCE. **Westmorland.**

[Lake District Plants exhibited to Dudley Field Club : *Asplenium viride*, *Alchemilla alpina*, from Mardale, and *Antennaria dioica*, from Long Street Mountain]. Midl. Nat., July 1887, x. 192.

HORACE PEARCE. **Cumberland, Westmorland, Derbyshire.**

[Garden-grown specimens of *Viola lutea* var. *amœna* from St. John's Vale, Keswick ; *Geranium sylvaticum* from Thirlspot, Keswick ; *G. pratense* from Castleton, Derbyshire ; *Asplenium viride* from mountain near Mardale, Cumberland, and *Polypodium robertianum* from Miller's Dale, Derbyshire, exhibited to Birm. Nat. Hist. and Micr. Soc.]. Midl. Nat., Aug. 1887, x. 215.

R. A. PRYOR. **? Durham or Yorkshire.**

Notes on some Hertfordshire Carices [with casual reference to *Carex flava* from Teesdale at p. 124]. Trans. Herts. Nat. Hist. Soc., vol. iv. part 4 (Jan. 1887), pp. 121-128.

W. H. PURCHAS. **Derbyshire.**

A List of Plants observed in S. Derbyshire [more particularly around Calke and Tickenhall ; references to previous work are first given, and then the plants in number, enumerated in systematic order, with specified stations for the more uncommon ones]. Journ. of Bot., Feb., April, May, 1887, xxv. 40-44, 101-107, 138-145.

HUGH RICHARDSON. **York S.W.**

Anacharis Canadensis, Planch. [in Went Vale, its stations, and approximate date of first appearance stated at about 1857 (not later)]. Nat. Hist. Journ., Dec. 15th, 1887, xi. 201.

Cumberland, Durham, York N.E., N.W., Mid W., and S.W.

LAWRENCE RICHARDSON [compiler]. **Lanc. S., Cheshire.**

Floral Calendar, 1887 [of observations made on 31 specified plants at 26 stations, including Silloth, Wigton, Cotherstone, Ayton, Thirsk, York, Settle, Rawdon, Ackworth, and Penketh ; with general notes thereon, and special mention of some species]. Nat. Hist. Journ., Oct. 15th, 1887, xi. 165-167.

B. S. ROWNTREE. **Lake District.**

Sport of Scented Orchis (*Gymnadenia Conopsea*) [flower-spike bifid, Lake District, July 1886]. Nat. Hist. Journ., March 15th, 1887, xi. 37.

B. S. ROWNTREE. **York N.E., S.E., and Mid W.**

York, Bootham [*Pilularia* still plentiful at Strensall, *Caltha* (still in flower), *Ophioglossum vulgatum*, *Calamagrostis lanceolata*, and *Habenaria chlorantha* near Pocklington, Sep. 19th, 1887 ; *Actæa spicata* and *Atropa belladonna* (both in fruit), and *Inula conyza* at Thorparch, Oct. 1st, 1887]. Nat. Hist. Journ., Oct. 10th, 1887, xi. 163.

M. B. SLATER. **York N.E., S.E., and N.W.**

Botany [Report on the Investigations of Malton members in 1886 in various parts of N.E. and S.E. Yorkshire ; numerous species mentioned]. Fourth Rep. Malton F. Nat. and Sci. Soc., 1886-7 (pub. 1887), pp. 17-19.

MATTHEW B. SLATER. **York N.E.**

The Yorkshire Naturalists' Union at Saltburn [May 30th, 1887 : the plants noted were *Helleborus viridis*, *Cardamine amara*, *Myrrhis odorata*,

Petasites vulgaris, *Glaux maritima*, *Cochlearia officinalis*, *Myosotis sylvatica*, *Atropa belladonna*, *Mentha viridis*, *Lamium purpureum*, (*L. album* not seen), *Orchis mascula*, *Iris fœtidissima*, *Asperula odorata*, *Prunus padus*, *Allium ursinum*, *Scilla nutans*, *Melica uniflora*, *Bromus mollis*, *Anthoxanthum odoratum*, *Alopecurus pratensis*, *Poa annua*, *Lolium perenne*, and of ferns *Scolopendrium*]. Nat., July 1887, pp. 219-220.

C. C. SMITH, Hon. Sec. **York Mid W.**

Craven Naturalists' Society [with dates for *Sesleria cærulea* at Malham, *Cochlearia officinalis* at Airton, *Lamium purpureum*, *Geum rivale*, *Adoxa moschatellina*, and *Chrysosplenium alternifolium* at Appletreewick, *Eriophorum vaginatum* at Thorpe, and *Oxalis acetosella* at Thorleby]. Nat. World., May 1887, iv. 96.

C. C. SMITH, Hon. Sec. **York Mid W.**

Craven Naturalists' Association [with dates for *Galium verum*, *Lychnis dioica*, *Myosotis palustris*, and *Fraxinus*, at Thorleby, *Saxifraga tridactylites* at Embsay, *Lamium album* at Skipton, and *Hyacinthus nonscriptus* at Skibeden]. Nat. World, June 1887, iv. 113.

A. H. SWINTON. **Westmorland.**

Poterium Sanguisorba [in the meadows at Grassmere, 1886]. Sci. Goss., April 1887, p. 95.

JNO. W. TAYLOR. **York Mid W.**

Occurrence of Vertigo alpestris Alder in Yorkshire [the vegetation on the wall on which it occurs—at Cottingley near Bingley—includes *Arenaria trinervis*, *Saxifraga tridactylites* and *Polypodium vulgare*]. Journ. of Conch., Oct. 1887, v. 238.

THOMAS HENRY THOMAS. **York Mid W.**

[**The Cowthorpe Oak** (*Quercus robur* var. *pedunculata*) described in an article entitled] Notes upon some fine specimens of Oak, Yew, Elm, and Beech, chiefly in the counties of Monmouth and Glamorgan. Cardiff Nat. Soc., Report and Trans. 1880, xii. 19.

JOHN VICARS. **Cheshire, Lanc. W.**

Botanical Résumé [of plants noted at excursions in 1886 of Liverpool N.F. Club, to Petty Pool, Cheshire, 5th June, and to Scorton, Lanc., 2nd Sept.; three species noted only, viz., *Caltha*, *Crataegus*, and *Sparganium natans*]. Proc. Liverp. Nat. F. Club for 1886-87 (pub. 1887), pp. 63-64.

JOHN VICARS. **Cheshire, Lanc. W.**

Names of some of the Most Interesting Plants noticed during the [Liverpool Field Club] Excursions in 1886 [enumerating five species found at Broxton, Cheshire, 14th Aug., and 12 at Scorton, Lancs., 2nd Sept.]. Proc. Liverp. Nat. F. Club for 1886-87 (pub. 1887), pp. 65-68.

H. J. WHARTON. **York N.E., Lancashire.**

[**Maianthemum bifolium, its only recognised habitat** as a truly indigenous British plant is on the west side of Forge Valley, near Hackness, where it is abundant; has also been reported from Lancashire on insufficient evidence]. Journ. of Micr. and Nat. Sc., Part 22, April 1887, vi. 97.

C. S. WILSON. **York Mid W.**

[Daphne] Mezereon [in] blossom, Ling Gill, near Ribblehead, April 8th [1887]. Nat. Hist. Journ., May 16th, 1887, xi. 85.

THOS. WINDER. **York S.W.**

Willow Roots [a curious mass of which filled up a three-inch earthenware drain-pipe at Hazle Head, for a length of 40 feet]. Nat. World, Jan. 1887, iv. 20.

R. S. WISHART. **Yorkshire, Cumberland.**

The Chickweed Winter Green (*Triantalis europæa*) [very rarely found south of Tweed, and appears to be confined to the hills about Cumberland and York, where it exists but sparingly']. Sci. Goss., April 1887, p. 76.

HIERACIUM ORARIUM IN DURHAM AND WEST YORKSHIRE.

G. E. MARTINDALE,
Liverpool College.

A SHORT time since I sent to Mr. F. J. Hanbury some *Hieracia* collected last autumn (August 1890), and among them were specimens of a plant I gathered first in Teesdale, on the banks of Langdon Beck, Durham, and afterwards near Clapham in Yorkshire. These Mr. Hanbury has named *H. orarium* Lind. It is probable that in both localities, as well as elsewhere, the plant has been taken by botanists to be a montane form of *H. vulgatum*.

Hieracium Gibsoni Backh. is still marked in the last revision of the 8th Edition of the London Catalogue as occurring only in one county—Mid-West Yorkshire. To this, however, must be added Westmorland, where it is most likely pretty generally distributed on the limestone. It occurs in fair abundance on Scout Scar. Here my father gathered it in 1861 or 1862, though for many years he looked upon it as a maculate form of *H. murorum*. Other persons who met with it there are the late Mr. Barnes, my friend Mr. George Stabler, and the Rev. E. F. Linton, who informs me that he gathered it in 1874. In the year 1883 it was collected near Kirkby Stephen by the Rev. E. S. Marshall (Journ. of Botany, xxvi. 27).

NOTES—ORNITHOLOGY.

Ornithological Notes from the Humber district.—Referring to Mr. Cordeaux's note on the Curlew Sandpiper (*Tringa subarquata*) in 'The Naturalist' for January, p. 22, I beg to say that on August 30th, 1890, I saw a large flock, numbering fully fifty birds, on the Humber 'muds' in this parish. I fired into them and killed eight and also a Dunlin (*Tringa alpina*) at the same shot. The greater part of them were young birds; one which now stands before me has down still adhering to the upper tail coverts. A pair of Turnstones (*Strepsilas interpres*) was also in company with them, the latter by no means a common bird thus far, within the Humber, the extensive mud-flats being unsuited to their habits.—J. W. HARRISON, Goxhill, Lincolnshire, January 20th, 1891.

Goldcrests and Redstarts at Easington in Holderness.—A few Golden-crested Wrens (*Regulus cristatus*) and Redstarts (*Ruticilla phœnicurus*) about here on Saturday and Monday last, the 4th and 7th April.—PHILIP W. LOTEN, Easington, Holderness, April 9th, 1891.

Spring Migrants in Cleveland.—Two Wheatears (*Saxicola œnanthe*), two Whinchats (*Pratincola rubetra*), and several Pied Wagtails (*Motacilla lugubris*) arrived on the 20th inst.—T. H. NELSON, Redcar, March 23rd, 1891.

Great Spotted Woodpecker and Hawfinch in Notts. and Yorkshire.—For the last fortnight the Great Spotted Woodpecker (*Dendrocopus major*) has been about the garden here (Aldercar Hall, Nottingham), and in last April (1890) I shot two Hawfinches (*Coccothraustes vulgaris*) in our own garden at Whitkirk.—T. E. PLATT, Whitkirk, Leeds, November 12th, 1890.

VERTEBRATE FAUNA OF LANGSTROTHDALE, MID-WEST YORKSHIRE.

C. H. B. WOODD, B.A.,
Oughtershaw Hall.

THE following is a contribution towards a knowledge of the fauna of the uppermost parts of Wharfedale—a district hitherto little visited by naturalists. Langstrothdale supplies a great variety of habitat, from the sheltered woods of Buckden to the bleak fells of Cam (about 1,900 feet); and hence it is that the fauna, considering the limited area, is a rich one. As regards the birds, I have relied largely on the observations of several friends (particularly Mr. Basil T. Woodd, of Knaresborough, and Mr. Basil R. Woodd, of Hampstead); several are marked doubtful, about which there is some uncertainty; while one or two are recorded as seen at Semmerwater, which, though not in our valley, is only a few miles distant. The list lays no claim to completeness, but may possibly serve as a basis for future observers to work upon.

It may be noted that Oughtershaw is more than 1,200 feet above the sea-level, and its avifauna would be much reduced but for the fir plantations which have grown up within recent years.

MAMMALIA.

Bats. The species have not been determined.

Erinaceus europæus. Hedgehog. Abundant, ascending to about 1,400 ft. in the fir plantations.

Talpa europæa. Mole. Abundant to 1,800 ft.

Sorex tetragonurus. Shrew. Abundant. Ascends to some 1,500 ft.

? Crossopus fodiens. Water Shrew. I cannot name this species with certainty.

Canis vulpes. Fox. Infrequent.

Martes sylvestris. Marten. Winter of 1880, at Buckden (Bishop, MS.).

Mustela vulgaris. Weasel. Abundant to 1,300 ft. or so.

Mustela erminea. Stoat.

Mustela putoria. Polecat. Now probably extinct in Langstrothdale, but occurred sparingly within the memory of the older inhabitants.

Lutra vulgaris. Otter. Infrequent; has been hunted up to Beckermonds.

May 1891.

Cervus dama. Fallow Deer. Domesticated in Buckden Woods.

Sciurus vulgaris. Squirrel. Rare as high up as Oughtershaw, but occurs at Buckden.

Mus musculus. House Mouse.

Mus decumanus. Brown Rat.

Arvicola amphibia. Water Vole. Abundant near the source of the Wharfe.

Arvicola agrestis. Field Vole. Abundant to 1,300 ft. or more.

Lepus europæus. Hare. To 1,800 ft. Never abundant, and less so than formerly. White specimens have been seen in winter.

Lepus cuniculus. Rabbit. Abundant to 1,500 or 1,600 ft.

AVES.

Turdus viscivorus. Missel Thrush. Plentiful.

Turdus musicus. Song Thrush. Plentiful.

? Turdus pilaris. Fieldfare.

Turdus merula. Blackbird. Plentiful.

Turdus torquatus. Ring Ouzel. Fairly numerous.

Cinclus aquaticus. Dipper. Very plentiful. I have found a nest for several consecutive years in a cleft of the rocks, behind what is, in time of rain, a considerable waterfall.

Saxicola œnanthe. Wheatear. Very plentiful.

? Pratincola rubicola. Stonechat.

Erithacus rubecula. Redbreast.

Sylvia rufa. Whitethroat.

Regulus cristatus. Goldcrest.

Accentor modularis. Hedge Sparrow.

Parus cæruleus. Blue Titmouse. Plentiful.

Parus major. Great Titmouse.

Troglodytes parvulus. Wren. Plentiful.

Motacilla lugubris. Pied Wagtail.

Motacilla melanope. Grey Wagtail. Plentiful.

Anthus pratensis. Meadow Pipit.

Muscicapa grisola. Spotted Flycatcher.

Hirundo rustica. Swallow.

Chelidon urbica. Martin. Plentiful.

? Carduelis elegans. Goldfinch.

Passer domesticus. Sparrow.

Fringilla cœlebs. Chaffinch. Very plentiful.

Linota cannabina. Linnet.

Linota flavirostris. Twite.

Pyrrhula europæa. Bullfinch. Infrequent.

Emberiza citrinella. Yellowhammer. Fairly abundant.

Alauda arvensis. Skylark.

Sturnus vulgaris. Starling. Immense flocks are sometimes seen in autumn. A white specimen was observed some years ago.

Pica rustica. Magpie. Fairly numerous.

Corvus monedula. Jackdaw.

Corvus corone. Carrion Crow.

Corvus frugilegus. Rook. Rookery at Beckermonds.

? Garrulus glandarius. Jay.

Cypselus apus. Swift. Buckden.

Alcedo ispida. Kingfisher. Only occasionally seen so far up as Oughtershaw.

Cuculus canorus. Cuckoo. Common. A young bird was shot above Oughtershaw, some years ago, late in August.

Asio accipitrinus. Short-eared Owl. Oughtershaw Moss.

Asio otus. Long-eared Owl. Buckden.

Circus cyaneus. Hen-Harrier. Not seen within recent years (B.T.W.).

Accipiter nisus. Sparrow Hawk. This year a brood was reared in the plantation below our house.

Falco tinnunculus. Kestrel. Plentiful.

Ardea cinerea. Common Heron. Not so frequently seen at Oughtershaw as lower down.

Botaurus stellaris. Bittern. There is a stuffed specimen in the valley which was shot at Semmerwater during a severe winter.

Querquedula crecca. Common Teal. Frequently found at Oughtershaw Tarn (1,800 feet), and near the source of the Wharfe.

Anas boschas. Mallard. Oughtershaw Tarn and source of Wharfe.

Columba palumbus. Ring Dove.

Phasianus colchicus. Pheasant. A few have been introduced into the Buckden Woods, and occasionally wander as far up as Oughtershaw.

Perdix cinerea. Partridge. A few are generally to be found at Oughtershaw, but until recently were hardly known in the upper parts of the valley.

Lagopus scoticus. Red Grouse. Abundant on Oughtershaw Moss and elsewhere.

Tetrao tetrix. Black Grouse. Observed this year at Buckden.

Rallus aquaticus. Water Rail.

Crex pratensis. Land Rail.

Charadrius pluvialis. Golden Plover. Generally to be found on Cam Fells, Fleet Moss, etc.

Vanellus vulgaris. Lapwing. Very abundant.

Scolopax rusticola. Woodcock. Buckden. Rarely seen.

Gallinago gallinula. Jack Snipe. Occurs sparingly. A specimen was shot at Oughtershaw some years ago (1879) at an exceptionally early date—about the middle of August—and is probably the instance referred to on p. 74 of 'Yorkshire Vertebrata.'

Gallinago cœlestis. Common Snipe. Common.

Tringa alpina. Dunlin. Semmerwater (B.R.W.).

Totanus hypoleucos. Common Sandpiper.

Numenius arquata. Common Curlew. Plentiful.

Larus argentatus. Herring Gull. The sea at Morecambe Bay is not very far distant.

Larus marinus. Great Black-backed Gull.

Sterna fluviatilis. Common Tern. Semmerwater.

Colymbus septentrionalis. Red-throated Diver. Stuffed specimen from Semmerwater; shot during winter-time.

REPTILIA.

Lacerta vivipara. Common Lizard. Infrequent. Oughtershaw Moss, 1,300—1,400 ft.

? Lacerta agilis. Sand Lizard. I regret that I have only memory to trust to concerning this species. I recollect keeping in confinement some years ago a Lizard, which, from its dark colouring, variegated with glossy blue markings, could not, I think, be other than *L. agilis*. It was a small specimen, and was taken on Cocklee Fell (Oughtershaw Moss) during a hot dry August. This capture would be interesting, both from the habitat being an unusual one for *L. agilis*, as well as for the fact that *L. vivipara* is the only Lizard definitely recorded for Yorkshire (Handbook of Yorks. Vert., p. xli).

Vipera berus. Viper. Oughtershaw Moss. Rare (B. T. Woodd).
Anguis fragilis. Slow-worm. Oughtershaw Moss. Infrequent.

AMPHIBIA.

Triton tæniatus. Smooth Newt. In a small tarn near Beckermonds, 1,300 ft.
Rana temporaria. Common Frog.

PISCES.

Salmo fario. Common Trout. Abundant up to the very source of the Wharfe.
Cottus gobio. River Bullhead. Fairly abundant.
Leuciscus phoxinus. Minnow. In the quieter reaches of the Wharfe about Buckden.

NOTES—ORNITHOLOGY.

Bittern near St. Helens, Lancashire.—A Bittern (*Botaurus stellaris*) was shot by Mr. James Hayes, on the 31st December, 1890, at Ramfold Farm, Eccleston, near St. Helens.—R. G. Brook, Wolverhampton House, St. Helens, Lancashire, April 21st, 1891.

Flamborough Bird-Notes.—The weather here has been very severe for a considerably long time, but in a very favourable quarter for sending us our spring and summer visitants. In February and March there were great arrivals of Pied Wagtails (*Motacilla lugubris*); also on April 6th several Blackstarts (*Ruticilla tithys*) and Redstarts (*R. phœnicurus*). I think it must be nearly ten years ago since I have seen that magnificent bird, the Blackstart, at Flamborough. He pops about in such splendid style, first on the ground, then on to the posts or on the twigs or branches, then again on to a wall or the ground before you can scarcely see him. I believe altogether the wind and weather have been quite opposite for the birds leaving our shores. For days and weeks Hooded Crows (*Corvus cornix*) have been hanging about the Headland; also several Woodcocks (*Scolopax rusticola*).—Matthew Bailey, Flamborough, April 16th, 1891.

NOTE—PHANEROGAMIC BOTANY.

Sedum Rhodiola DC.—I was glad to see Mr. Whitwell's remarks on the 'Flowering Plants and Ferns of Upper Swaledale,' as one of my sons had previously called my attention to the chief points calling for remark, though he declined to write a note about them. However, as no one else has yet called attention to an error made by Mr. Whitwell, I venture to point out that the above-mentioned *Sedum* is not confined to slate rock. I have seen it on the Yoredale Limestone of two at least of our West Riding hills, and though I have also seen it in the greatest profusion in Scotland and the Lake District, yet I can state that it is quite as luxurious and abundant too on the Yoredale Limestone of one West Riding hill. I have previously pointed out in this journal that *Leontodon hirtus* L. occurs profusely in West Yorkshire up to seven or eight hundred feet. I am not able to refer to a copy of 'North Yorkshire.' Mr. Whitwell says that *Arctostaphylos Uva-ursi* Spreng. is not in this work for 'the western hills.' I have seen it in abundance while clambering down the western parts of Cronkley Scars.—Wm. West, Bradford, March 24th, 1891.

LANGSTROTHDALE FUNGI.

C. H. B. WOODD, B.A.,

Oughtershaw Hall.

In the latter part of the summer of 1888, a particularly wet year, our attention was attracted by the abundance of Fungi (chiefly the more conspicuous Hymenomycetes) to be found in the immediate neighbourhood of Oughtershaw. We accordingly made a number of figures—representing about one hundred varieties—to which a few have since been added. These have recently been submitted to Mr. George Massee, of Kew, who has kindly examined them, and has been able to identify some seventy species, included in about thirty-six genera and sub-genera. The area from which by far the majority of the species were collected is very limited—namely, the immediate neighbourhood of Oughtershaw, which is situated at about 1,200 feet above the sea-level. The rest were collected in other parts of Langstrothdale, especially the Buckden Woods. They were all gathered in the months of August and September. Mr. Massee calls attention to the fact that an important majority of the species are *white-spored*, included in the sub-genera *Amanitopsis*, *Lepiota*, *Armillaria*, *Tricholoma*, *Collybia*, *Mycena*, *Clitocybe* and *Laccaria* of the genus Agaricus; and the genera *Lactarius*, *Russula*, and *Hygrophorus*. He further remarks that the species of the last-named genus are said to be characteristic of high latitudes and elevated regions, and are assisted in their development by a little frost; and that this seems to be borne out by the occurrence of nine species in this neighbourhood which he is able to identify, besides several others at present undetermined.

In the subjoined list I have distinguished by an asterisk eleven species which appear to be unrecorded in Mr. Lees' 'Flora of West Yorkshire.' This number would be increased to thirteen were there not some little doubt regarding *Leptonia lampropus* and *Cortinarius albo-violaceus*.

Agaricus (Amanitopsis) vaginatus Fr. Fir plantation, Oughtershaw.

Agaricus (Lepiota) cristatus Fr.

Agaricus (Lepiota) granulosus Batsch. Amongst grass, Oughtershaw.

Agaricus (Armillaria) melleus Fl. Dan. Oughtershaw. Decaying stumps.

Agaricus (Tricholoma) imbricatus Fr. Oughtershaw Wood.
Agaricus (Tricholoma) bufonius Fr. Fir-wood.
Agaricus (Tricholoma) terreus Schæf. Oughtershaw Woods. Very common.
Agaricus (Collybia) radicatus Relh. Tree-stumps.
Agaricus (Collybia) dryophilus Bull. Moor-top.
Agaricus (Collybia) maculatus A. & S. Under fir-trees, Oughtershaw Wood.
*__Agaricus (Collybia) clavipes__ Per. Mossy grass.
Agaricus (Mycena) vulgaris P. Tree-stumps, etc., Oughtershaw.
Agaricus (Omphalia) sp. Buckden Woods.
*__Agaricus (Leptonia) lampropus__ ? Meadow.
Agaricus (Nolanea) sp. Cam Road.
Agaricus (Clitocybe) laccatus Scop. Under fir-trees, Oughtershaw.
Agaricus (Clitocybe) cyathiformis Fr. Mossy wall, Oughtershaw.
Agaricus (Clitocybe) geotropus Bull. In a fir-wood.
Agaricus (Entoloma) sericeus Bull. Meadow.
*__Agaricus (Clitopilus) orcella__ Badh. Oughtershaw Wood.
Agaricus (Galera) tener Schæff. Meadow.
*__Agaricus (Naucoria) pediades__ Fr. Wet meadow.
*__Agaricus (Naucoria) cerodes__ Fr. Meadow.
Agaricus (Psalliota) campestris L. Meadows. Common.
*__Agaricus (Hebeloma) mesophæus__ Berk. Oughtershaw Wood.
Agaricus (Stropharia) semiglobatus Batsch. Meadows. Very common.
Agaricus (Stropharia) æruginosus Curt. Under fir-trees, Oughtershaw.
Agaricus (Hypholoma) fascicularis Huds. Decaying trunk.
Agaricus (Panæolus) papilionaceus Bull. Oughtershaw. Common.
Agaricus (Panæolus) campanulatus L.? Meadows.
*__Coprinus aratus__ Berk. Oughtershaw.
*__Cortinarius albo-violaceus__? Oughtershaw Woods.
*__Cortinarius (Dermocybe) caninus__ Fr.

*Cortinarius (Telamonia) **gentilis** Fr.
Cortinarius (Hydrocybe) **acutus** Pers.
Gomphidius **viscidus** L. Fir-wood.
Hygrophorus **pratensis** P. Pasture. Common.
Hygrophorus **virgineus** Wulf.? Hill pasture.
Hygrophorus **ceraceus** Wulf. Meadows, etc. Common.
Hygrophorus **miniatus** Fr. Moorland.
Hygrophorus **puniceus** Fr. Meadows, etc., Oughtershaw.
Hygrophorus **conicus** Scop. Pastures, etc. Very common.
*Hygrophorus **chlorophanus** Fr. Moorland pasture.
Hygrophorus **psittacinus** Schæff. Meadows. Common.
Hygrophorus **coccineus** Fr.
Lactarius **chrysorrhæus** Fr. Common. Oughtershaw Wood.
Lactarius **quietus** Fr.
Lactarius **subdulcis** Bull. Oughtershaw Wood.
Lactarius **rufus** Fr. Oughtershaw Wood.
*Russula **rosacea** Fr. Common.
*Russula **virescens** Fr. Oughtershaw Wood.
Marasmius **insititius** Fr. Under fir-trees, Oughtershaw.
Boletus **granulatus** L. Oughtershaw.
Boletus **piperatus** Bull. Oughtershaw Wood.
Boletus **scaber** Fr. Common.
Polyporus **sulphureus** Fr. Raisghyll, on trunk of Ash-tree.
Polyporus **versicolor** Fr. Hurdle-rail, Yokenthwaite.
Polyporus **adustus** Fr. Ling-ghyll, rather beyond our area.
Stereum **hirsutum** Fr. Water-butt in greenhouse, Oughtershaw.
Clavaria **rugosa** Bull. Oughtershaw Wood.
Clavaria **vermiculata** Scop. Meadow, Oughtershaw.
Clavaria **rosea** Fr. Meadow.
Tremella **mesenterica** Retz. Buckden Woods.
Lycoperdon **giganteum** Batsch. Common. Oughtershaw, etc.
Lycoperdon **cælatum** Fr. Yokenthwaite.
Lycoperdon **pusillum** Fr. Meadows.
Lycoperdon **gemmatum** Fr. Buckden Woods.
Lycoperdon **pyriforme** Schæff. Hill pasture.
Peziza **scutellata** L. Oughtershaw Wood.
Xylaria **hypoxylon** Fr. Oughtershaw.

ARE STARLINGS DOUBLE-BROODED?

Rev. HENRY H. SLATER, M.A., F Z.S., M.B.O.U.,

Vicar of Irchester, Northamptonshire.

I THINK that it is about a couple of years since Mr. Mitchell asked this question in 'The Naturalist.' He asked me the same question privately, but I had not given the matter sufficient attention to express a decided opinion either way. I have, however, been paying some attention to it this spring (1890), and have come to the conclusion that, at all events in a large number of cases, the question at the head of this must be answered in the affirmative. The following circumstance, amongst others, seemed to me tolerably conclusive.

It was one day in the first week of June 1890, towards evening, that I and my two elder boys disturbed a flock of some hundred Starlings from a small wooded island in the lake which lies in the middle of the Park near here. They were preparing to roost, and we were close to them. There was not one old bird amongst them. They were all brown young birds of the year, but strong on the wing and well feathered. There were plenty of old birds flying about the park, but singly, and evidently still feeding young ones, for their bills were often full of food, and they were often dropping 'things' which fell heavily on the surface of the lake. There are many old elms in the park, with woodpecker holes, which Starlings inherit, and are very partial to.

But I never knew with certainty of Starlings laying two consecutive clutches of eggs in the same hole; or only in the case of so desirable a spot as a pigeon-cote of the old-fashioned kind on a pole. There were many birds—too many to observe closely--and many holes, but certainly these latter seemed to be appropriated without exception from March to June.

But there is a reason why Starlings might easily prefer not to rear two broods in the same year in the same nest. Starlings, as most people are aware, are 'thickly inhabited' birds, and by the time that a brood of young birds are ready to fly, the hole, as most people also know, is, to say the least, 'populous' to an extent sufficient to make it very desirable that it should not be used again that year. Hence it becomes difficult to settle the question of second broods with sufficient accuracy. That can only be done where they are strictly protected, and where there are individual birds who, from some peculiarity, can be recognised.

It seems appropriate to add, that a Hedge Sparrow this morning (July 1st, 1890) laid her fourth egg in her third nest this season in the

same ivied court in front of the study window where I am now writing this. The other two nests were within five yards of her present one, and both broods got safely away—an unusual thing in this cat-beridden place. I am quite certain that one individual, at least, of the pair has had a share in all three nests—I presume, the female; at all events, the one which has taken the largest share of the work in incubation. She has a peculiar bare patch on her neck, by which she is recognisable at a glance. And both she and her mate are quite tame, and feed their young without concern, when some person may be gardening within a few yards of the nest.

NOTES—MAMMALIA.

Churchwardens' Accounts, Cockerington S. Mary's, North Lincolnshire.—Mr. R. W. Goulding, of Louth, has extracted the following Natural History notes from the parish accounts of Cockerington S. Mary's (or North Cockerington) near Louth.

Corvus monedula.—In 1734, 1s. 4d. was paid 'for two men stoping jackdaws out.'

Talpa europæa.—In 1732, John Tomson received 15s. 'for mouling.'

Vulpes vulgaris.—In 1735, John Shipton and Henry Hutton were paid 1s. 'for killing a fox.'

Lutra lutra.—In 1744, 1s. was given to Wm. Souden 'for catching an otter.'—J. BURTT DAVY, Alford, Lincs., January 17th, 1891.

Red Field Voles near Lotherton, Yorkshire.—Bird-lime is usually made by boiling linseed-oil until it attains the requisite tenacity, and recently I had a somewhat curious experience in the way of natural bird-lime. Whilst walking in company with Mr. Roebuck from Micklefield to Tadcaster on the 1st inst., I noticed a broken stone jar lying by the road-side, not far from Lotherton. It had contained linseed-oil, and had evidently fallen from the cart on which it had been carried. A little oil still lay in one of the broken pieces, but it was quite thick and yellow, as though it had been exposed some time. It was very tenacious, and had done its work only too well. Two Red Field Voles (*Arvicola glareolus*) were lying dead in the oil, having no doubt been attracted by the substance, and unwillingly detained.—EDGAR R. WAITE, The Museum, Leeds, 21st March, 1891.

Common Field Voles at Eccup.—Anyone who is in the habit of visiting Eccup Reservoir will probably have noticed the fringe of long grass which grows between high and low water-marks. When covered by water this grass stands up, but is laid when the water recedes. The Reservoir has been almost empty since the middle of December, 1890, for the purpose of alterations. I frequently visit the Reservoir, and have done so several times during the work of reconstruction. On the 28th February last I noticed that the sandy soil (in which grows the grass before-mentioned) was drilled all over with small holes. I had scarcely made the discovery when some of the perpetrators put in an appearance. The Common Field Voles (*Arvicola agrestis*) had taken possession, and these little creatures were scurrying about in all directions through the grass, which was lying down like the swathes in a meadow. The Voles were very numerous, and four or five were frequently in sight at once, so that, although they were very quick, I managed to catch one or two of them. I looked carefully at the ground both above and below the area occupied by the grass, but could not find a single burrow, although, as I have said before, this particular tract was perforated in all directions.—EDGAR R. WAITE, The Museum, Leeds, 3rd April, 1891.

THE ANCIENT LAVAS OF THE ENGLISH LAKE DISTRICT.

ALFRED HARKER, M.A., F.G.S.

The existence of a great series of volcanic rocks in the English Lake District has long been recognised, although very little precise information about them has been forthcoming. The rocks were first described by Sedgwick, who, in the terminology of his day, named them the 'Green-Slates and Porphyries.' Messrs. Harkness and Nicholson have termed them the 'Borrowdale Series,' from the fine development of a portion of the succession in that valley. The series forms part of the Ordovician system (Lower Silurian of the Geological Survey), and must be of the same general age as the volcanic rocks of Caernarvonshire. The volcanic accumulations occupy all the central part of the Lake District, being bounded northward by the Skiddaw Slates, while to the south they terminate with the Coniston Limestone, and are succeeded by the Silurian strata (Upper Silurian of the Survey). Further, a belt of volcanic rocks belonging to the same series runs along the northern edge of the Skiddaw Slate area.

Fragmental rocks (breccias, coarse and fine ashes, etc.) form a large part of the volcanic series, often in beds alternating with the lavas, but it is to the latter alone that we shall refer here. With regard to chemical composition, the lavas divide into three distinct sets—basic, intermediate, and acid; and these will be briefly noticed in order.

The *basic lavas*, with certain associated ashes, etc., occupy the northerly belt already mentioned, and are especially well exhibited at the eastern end of their course, in Eycott Hill, near Troutbeck Station. They contain 51 to 53 per cent. of silica, and have a specific gravity of about 2·75. Unlike most lavas of similar chemical composition, they contain no olivine, but instead we find other basic minerals abundant, and particularly hypersthene; so that the rocks may be termed hypersthene-basalts. The most striking type is seen in a thick flow rather low down in the Eycott section, where it stands out conspicuously, forming a row of small prominences. It is distinguished by its enclosing porphyritic crystals of triclinic felspar up to an inch or even two inches in length in a compact ground. The crystals often have a rather tabular shape, with rounded outline. When fresh, they are quite glassy in aspect, and show distinctly the Carlsbad twinning, as well as the usual twin-striation. They belong to the variety bytownite. The other flows seen in Eycott Hill are compact throughout, or enclose only

small porphyritic crystals. All the upper sheets are of this type, and these show a very marked 'flow-structure.' The hypersthene is indicated only by minute black spots. In thin sections, however, it is easily recognised, though quite altered into bastite. With it occur some augite, magnetite, etc. These compact basalts have normally a dark colour, but sometimes, as in Charlton Gill, they become pale and reddish, owing to oxidation of the iron compounds, and they might almost be mistaken for some of the acid lavas. It should be noticed that a vesicular or amygdaloidal character is found in some of the flows, or, rather, near their upper and lower surfaces.

By far the greater number of the Lake District lavas belong to the *intermediate division*, giving 59 to 61 per cent. of silica on analysis, and having a specific gravity 2·65 to 2·7. They are pyroxene-andesites, the pyroxene being sometimes a rhombic one (hypersthene), sometimes a monoclinic (augite), or the two often occurring together. These minerals are not in large enough crystals to be easily detected by eye, though the dark patches due to their decomposition-products may often be observed. Porphyritic felspars are usually present, sometimes rather crowded and up to a quarter of an inch long, but more usually scattered, and often minute. The ground-mass has a very compact look, with usually either a pale greenish or a dark grey tint. Many of the flows are vesicular, or have their uppermost and lowest layers vesicular; and the vesicles may reach considerable dimensions, as, for instance, on some parts of Grange Fells. They are commonly filled with chalcedony, agate, calcite, chloritoid substances, etc., in concentric layers.

Some of the andesites have a special character in the occurrence of little red garnets. The occasional presence of garnets in the Lake District rocks is very striking. They occur in basic, intermediate, and acid lavas alike, and in the ashes and breccias associated with them. The mineral even occurs in some of the intrusive rocks, such as the Armboth dykes and others.

Most of the less resisting rocks in the Lake District have been more or less affected by profound mechanical disturbances, which operated after the Silurian period, and they have thus received a cleavage-structure. In some places the stresses produced have been very intense, and even hard lavas have become crushed and cleaved. This is very evident in the case of amygdaloidal lavas like the andesites near the Gates of Borrowdale, the vesicles being in places flattened into mere films; but compact non-vesicular lavas have also become cleaved, and some have even been worked as slates.

The *acid lavas* occur at more than one horizon among the andesites, but they are most developed at the summit of the whole

volcanic series, and in the middle of the Coniston Limestone group above. The rocks are rhyolites, with a silica-percentage up to 76 or 77 and a specific gravity of about 2·6. They are hardly ever conspicuously porphyritic, presenting most frequently a uniformly compact aspect. Often they are grey, with a rather flinty appearance; or, again, they acquire by oxidation and other changes a pink or cream-colour, and become duller in aspect. The flow-structure is sometimes strongly marked to the eye, and some of the rhyolites have quite a laminated look. Thin sections under the microscope suggest that the rocks have in many cases been largely glassy in texture, but have suffered various processes of alteration. One type of structure met with is the micro-spherulitic.

Among other secondary modifications, the rhyolites appear to be liable to impregnation with silica, and this may even go so far as to convert masses of the rock into a jaspery substance. More remarkable are the effects observed in certain globular bodies in the rock, having a diameter of one or two inches or more. These seem to be originally giant spherulitic structures, not fundamentally different from the minute ones seen under the microscope, but they become apparent only after certain chemical alterations. To such alterations, consisting especially in a kind of silicification, these spheroidal bodies are more susceptible than the rest of the rock. Some of the altered spheroids show concentric alternating shells of chalcedony or quartz, of a black chloritoid substance, and sometimes of comparatively unaltered rhyolite. In certain cases actual hollows are formed by the destruction of portions of the interior. The final stage is the conversion of the whole into a nodule of quartz, and sometimes the surrounding matrix of rhyolite also becomes silicified. Excellent examples of these phenomena are seen on the face of Great Yarlside and at other places in the neighbourhood.

The above are only the leading characters of the main types of Lake District lavas. The sources which gave vent to such extensive outpourings are still to be localised. The thickness of the whole volcanic series was estimated by Mr. Clifton Ward at 12,000 feet, but is probably much greater. In any case it betokens the long-continued prevalence of intense volcanic activity. This was heralded by a few minor outbursts during the deposition of the Skiddaw Slates, and, on the other hand, igneous activity appears to have lingered feebly into the beginning, at least, of the Silurian period; but the important display of vulcanicity in this area is comprised between the limits of the great Volcanic Series as defined above, and this part of England may dobtless furnnish important lessons concerning the essential features of a period of igneous manifestations.

May 1891.

In Memoriam.

NICHOLAS WEARMOUTH.

SINCE writing upon the Birds inhabiting Upper Teesdale (Naturalist, October 1885, p. 353), one from whom a great deal of my information was acquired, has passed away—Mr. Nicholas Wearmouth. He was a bona-fide naturalist, who made many of his observations and shot numbers of specimens on the Yorkshire side of the Tees. He was born on July 16th, 1826, and lived for many years at Newbiggin, a small village two miles or more west of Middleton-in-Teesdale. Here the writer and every bird-student who knew him loved to call and learn what he had to teach respecting the wild birds which (especially some ten years ago) were so very numerous in the dale. Mr. Wearmouth, though very constantly at work as a village grocer and provision dealer, frequently found time to 'ornithologise,' and some of the happiest hours which the mind can recall were spent in his company by the Tees side, or in 'Park End' Wood. Mr. Wearmouth at an early period of his life showed a great interest in birds and animals, but was more especially fond of the former. For some years, however, circumstances prevented him from giving much attention to his hobby, but about 1860 he began to study in earnest, and continued to do so with increasing vigour until the time of his demise. By nature gentle and courteous, Mr. Wearmouth won the respect of those who knew him, and even to a comparative stranger his kindness and friendship will not easily be forgotten. Nor were his hospitality or intelligent conversation the only attractions to his house at Newbiggin. For years, with untiring energy, Mr. Wearmouth (a self-taught taxidermist) collected and stuffed a vast number of birds, both British and Foreign, but chiefly the former, amongst which were many rare specimens from his beloved valley. The Rough-legged Buzzard (*Archibuteo lagopus*) and Sanderling (*Calidris arenaria*), both shot close to the village, are among the number. A fine cabinet, chiefly containing local birds' eggs, materially enhances the value of the collection, which is added to yearly by Mr. Wearmouth's son Joseph, who, like his father, is a true lover of nature. A clutch of eggs of the Red-backed Shrike (*Lanius collurio*) from nearer Middleton, grace this extensive cabinet. Mr. Wearmouth visited week by week the market at Barnard Castle, some seventeen miles away, and it was on one of these journeys that, through a slight mishap, an illness was brought on which terminated his useful life.

HARROGATE, *4th April*, 1891. J. BACKHOUSE.

FOSSIL CLIMATES.

A. C. SEWARD, M.A., F.G.S.,
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WITHOUT attempting to crowd into a short paper an undue number of facts or theories, we may begin by noting what some of the earlier geologists and palæobotanists have to say with regard to climates of past ages. Fossil plants, rather than animals, will be taken as guides in these weather retrospects; our attention will be centred round them, not concerning ourselves to any great extent with either physical evidence or evidence afforded by fossil animals. For many reasons, theories as to climate in past time were first propounded with reference to the Carboniferous period, or rather the uppermost division of that system—the Coal Measures. Perhaps even to-day the climate of that age has the greatest fascination for us, as more wrapped in obscurity and affording less valuable evidence than the plant-bearing beds of more recent systems, whose fossils, much more closely allied to living forms, tell us in more certain terms of changes of climate well nigh incredible. The botanist Antoine de Jussieu, in the early part of last century, was one of the first to draw any conclusions as to Carboniferous climate from the fossil plants so abundant and widely distributed in the Coal seams and associated strata. He pointed to tropical genera as the nearest relatives of coal plants, this relationship suggesting tropical conditions at the time when these plants formed the Carboniferous forests. Passing to the present century, we find Adolphe Brongniart, whom we may regard as the Father of palæobotany, referring to certain algæ in pre-cretaceous strata as indicative of a high temperature; the occurrence of a fossil Sargassum (the Gulf-weed) in Sweden being quoted in support of his conclusions. One may note, in passing, the impracticability of forming any theories on such extremely doubtful forms as the so-called 'fossil algæ.'

Taking his stand on surer ground, Brongniart lays stress on the high percentage of vascular cryptogams in the Coal Measures flora—five-sixths of the whole—as compared with the very subordinate position which the group holds to-day. It is pointed out that these Carboniferous vascular cryptogams are larger than modern genera, and differ further in the greater development of their stems, both facts regarded as suggestive of warmer climate. The same botanist recognises the uniform character of this flora, from Greenland and the shores of Baffin's Bay to localities in

widely separated latitudes, all yielding identical species. His conclusions are briefly as follows:—the predominance in Carboniferous times of vascular cryptogams, and the consideration of the conditions most favourable for the growth of such plants to-day, point to the Coal Period as one enjoying a moist and warm climate, the land more insular than in subsequent periods, the atmosphere more highly charged with carbonic acid gas. We should find, did time allow, that this is in the main the view held by most of the older botanists or geologists, and, indeed, one which finds a place in some of our modern text books.

In 1833, Witham published his work on 'The Internal Structure of Fossil Vegetables.' Here is followed a new line of inquiry; the absence or very slight development of annual rings of growth in the wood of Carboniferous trees, their existence in Jurassic Conifers, indicating in the former period a uniform temperature without sharply defined alternations of seasons, in the latter a succession of periods of rest and of active growth, which have left their mark in autumn and spring wood. This annual ring test is further taken up by Lindley and Hulton in their 'Fossil Flora,' and is well worthy of careful investigation to-day by those interested in palæoclimatic questions.

Prof. Renault, of Paris, notes the superiority of plants over animals as tests of climate, the former, without the means of locomotion possessed by the latter, being more susceptible to temperature changes.

Dr. Archibald Geikie and other writers lend their support to this view, that in plants rather than animals we have the best thermometers of the past.

Sir Charles Lyell emphasises the serious difficulty attending deductions as to temperature from fossil plants. On those older types—which in species, and even in genus and family, differ from present day forms—we can rely but little. We must be careful in any case—i.e., in all geologic periods—to take into account the absence of competitive forms of a higher grade, whose presence in more recent times has doubtless played a most important part as a factor in geographical distribution.

In speaking of the earlier calculations as to the Coal Period climate, Lyell notes a modification in the opinions of botanists, formerly in favour of a tropical temperature. Quoting such cases as the Mammoth, whose thick and warm coat Cuvier regarded as a protection against Arctic cold, he suggests that this power of adaptation may have been possessed by those Carboniferous plants whose remains are preserved within the Arctic circle. We are

referred to a New Zealand forest as the nearest approach to the evergreen forests of the Palæozoic period. Even here we may remember how tree ferns almost overhang the terminal moraines of glaciers; a striking caution, which should temper our rashness in settling climatal questions.

In dealing with these older plants—and, indeed, with all fossils—one cannot be too mindful of the many instances in the vegetable and animal kingdoms which prove how closely-related species may live under very different conditions of climate. It is well known how Palms, generally characteristic of warm countries, are represented by species growing in northern latitudes in Europe; in the Himalayas, too, palms, bamboos, and Conifers grow in close association. Many land plants of the north temperate zone have been found to extend themselves rapidly when afforded an opportunity of spreading in warmer latitudes.

In the case of animals, many similar examples might be taken warning us against the danger of regarding a close specific relationship as a necessary mark of similar habitats. To take one instance: the chamois—a kind of antelope—delights in the severe cold of Alpine heights, the antelopes generally being inhabitants of warmer regions ('Nature,' 1890, pp. 148-151, pp. 175-180; 'The Climates of Past Ages,' Neumayr).

This power of adaptation in plants is a subject as interesting as it is significant and suggestive, but we cannot now stay to describe the peculiar leaf-structures in certain Greenland plants, or in such as flourish further south in the Steppes, by which the periods of drought are tided over.

Let us rapidly sketch the general conditions of climate in the past, noticing here and there such facts as may tend to modify some of the generally received ideas with regard to past temperatures. Leaving out of consideration the oldest periods, we plunge at once into the shades of a Carboniferous forest. A vast expanse of forest-covered swamp, or low-lying ground, thickly set with archaic types of vascular cryptogams, with whose protean genera one is familiar in the various 'Carboniferous landscapes,' the same genus being made to appear in such a garb as may best suit the theories of the botanical reconstructor or the artist's conception of sylvan beauty. The higher ground, standing out from these level plains, studded doubtless with more hardy Conifers, whose remains occur so abundantly in the Carboniferous sands alternating with the Coal seams. It has already been pointed out what is the general verdict as to the Coal Period climate:—warm, if not tropical; an atmosphere laden with aqueous vapour, rich in carbonic acid gas; a uniform

temperature, proved by the world-wide distribution of typical coal-measure fossils; violent rains—as to-day in the tropics—pitted the sands of the Carboniferous flats; whether, indeed, these showers were of tropical intensity is beyond us to decide; that rain there was, is proved by the sandstone rain-prints.

At the British Association Meeting at Montreal, Dr. Blanford threw out the suggestion that evidence is not wanting in favour of distinct floras in the Carboniferous period. Not only have we a highland flora and a plain flora—as previously recognised by Godwin-Austen and others—but in the southern hemisphere the characteristic Carboniferous flora is replaced by another set of plants, destined in later periods to extend over a wide area, and gradually drive out the Coal Measure forms which held on for a longer period in the northern hemisphere.

To examine the evidence against the generally received opinion of a uniform Carboniferous flora. We shall find it more convenient to include in one system the Carboniferous and Permian rocks; the plants of the two differ rather in degree than in kind, and some of the plant-bearing beds of the southern hemisphere cannot be regarded in the present state of our knowledge as undoubtedly Carboniferous, but may at present be included in a Permo-Carboniferous bracket. In India, Australia, South Africa, and Afghanistan there occur abundant plant-remains of the same type in beds referred to the Carboniferous and Permian systems, which differ essentially from the typical Permo-Carboniferous flora of the northern hemisphere, having a distinctly Mesozoic facies. These southern abnormal forms are regarded as the ancestors of the Mesozoic flora of the northern hemisphere. This southern Permo-Carboniferous flora is generally spoken of as the Glossopteris flora, from the widespread occurrence of the reticulately-veined tongue-shaped leaves, presumably those of a fern.

In the Salt Range of Northern India, in more southerly districts in the Indian Peninsula, in South Africa and Australia, there are interbedded with Glossopteris-bearing strata thick deposits of a stiff clay, full of rounded and scratched stones—deposits referred by the majority of geologists most competent to express an opinion on the subject to the action of ice. We have, then, in these several countries a certain flora—and, indeed, foreshadowed in beds of the same age in China—very different from the European Carboniferous flora, and much more closely allied to our Triassic vegetation. With this flora are associated in certain districts ice-scratched blocks. The late Prof. Neumayr, of Vienna, regarded this southern flora as a continental one; in Permo-Carboniferous times, Africa, South and

Middle India, and Australia being in direct communication. Over this continent—for or against whose existence we have no time to discuss the arguments—there obtained a cold or even Arctic climate, which drove north the older types of Carboniferous plants—traces of which have been found in Australia and South Africa underlying the Glossopteris beds—and gave birth to a mountain flora or Permo-Carboniferous Alpine vegetation. Allowing that this is a theory not unassailed by arguments whose weight calls for careful consideration, we will further consider what are the main reasons which compel us to depart from the orthodox views as to the Coal Period vegetation and climate. Allowing the occurrence in the southern hemisphere of this Glossopteris flora, and the fact that even in North America certain species of Carboniferous plants are found unknown in Europe, that differences are noticed in Arctic Carboniferous plants, and again in the China flora of the same age, we must still admit a widely-spread typical Carboniferous vegetation. But does this necessarily imply a uniform tropical climate? As was pointed out years ago and recently insisted upon by Neumayr, we must take into account the fact that the Carboniferous plants—well adapted in their very nature to easy and wide distribution by spores—had not the formidable rivalry of the higher plants, the Monocotyledons and Dicotyledons, to contend against, and could spread over wide areas without having to yield to superior force in the struggle for existence.

In a lecture delivered in Vienna in 1889, Prof. Neumayr, speaking on this subject, remarks:—'It is not in the towering primæval forests of India and Brazil, nor the mangrove swamps of tropical coasts, but in the moors of the sub-Arctic zone that plant-remains are now being stored up in a form that, in the course of geological ages, may become converted into beds of coal' ('Nature,' loc. cit.). He points out how the greatest deposits of coal are restricted to a zone outside the tropics; within the tropics the typical Carboniferous plants are conspicuous by their absence. Whether we take our stand on facts of plant geography in Carboniferous times, or on the physical conditions favourable for the accumulation and conversion into coal of the Palæozoic forests, we are compelled to depart from the old opinions, and without dogmatising in definite terms, must allow a difference in temperature in different latitudes and the existence. even in the remote Carboniferous age, of sharply-contrasted floras.

Without stopping to particularise as to Triassic climates, one may remark, even in this more recent period, a striking uniformity in the general character of the flora. In the same period we notice an

important change in the type of vegetation: in the northern hemisphere are introduced those new elements already recognised in the abnormal southern flora of Permo-Carboniferous times. We have here the last survivors of the Carboniferous types in competition with the newer forms; as the Marquis of Saporta puts it: 'Old age and infancy together.'

As to the Jurassic climate, the Cycads so abundant in our own island suggest a temperature considerably higher than the present. To turn for a moment from plants to animals. Prof. Neumayr, after careful and detailed examination of the Jurassic fossils, recognises in the differences of the Ammonites and other genera from different latitudes evidence for the existence of climatic zones.

Next, to pass in review the plant evidence of Cretaceous and Tertiary times. The most interesting facts in connection with these systems are those furnished by the various finds of fossil plants in Arctic regions. From Kome, Atave, and other Greenland districts, Dicotyledons, Ferns, Cycads, and Conifers have been collected of Cretaceous age, indicating a climate warm and possibly moist.

In the lowest beds of Cretaceous age we have suddenly appearing the deciduous-leaved Dicotyledons, described as the greatest revolution ever seen in the botanical world. As to the significance of this with reference to climatology, the sharper seasonal contrasts, and other matters of greater or less interest, we cannot stay to discuss.

In conclusion, to pass to surer ground, and note the evidence afforded by Tertiary plants; evidence of greater value in proportion to the closer relationship between Tertiary forms and their living descendants. In Eocene times—the first chapter in Tertiary history—Europe—then an archipelago of islands—enjoyed a climate sub-tropical or even tropical. Palms, *Dracænas*, *Eucalyptus*, *Magnolias*, *Lycopodiums*, *Aspleniums*, with the more familiar Chestnuts, Willows, Figs, Maples, and other genera, flourished in these latitudes. The predominance of the order Proteaceæ gave to this Eocene flora an Australian aspect. In the Arctic genera of the same age we have evidence of the effect of difference in latitude, already evident in the preceding Cretaceous and Jurassic flora. This English Eocene flora, according to Mr. Starkie Gardner, could now exist in Madeira, the Iceland flora in the Isle of Wight, that of Spitzbergen in Sweden, that of Grinnell Land in North Norway. In the succeeding and younger Tertiary beds we have a rich and varied evergreen flora, linked by many ties with the flora of America and the tropical floras of India and Australia.

Heer, par excellence the botanist of the Tertiary period, claims for the northern Alps in Switzerland, in middle Tertiary times, a mean temperature of 68°–72° F., such as now obtains at Cairo. No doubt one might give mean temperatures for all the past periods in the earth's history, but they would be of little value even for these more recent and better known Tertiary beds; there are so many other considerations to take into account beyond the mere comparison of fossil and present-day species, however closely the two may be related.

Starting with a subtropical or tropical climate in the Eocene period, we pass up the series, noting as we ascend a steady but gradual decrease in temperature until we find ourselves in more recent English strata in company with the dwarf birch and Arctic willow, plants which prepare us for the swing of the pendulum to the other extreme, where from the Arctic regions to Central Europe extend slowly-spreading tongues of ice, uniting at the maximum of cold to form an ice-sheet almost continuous. Here and there stood out the higher peaks of land, oases in the ice desert, held as their last stronghold by a few hardy plants, as now on those peaks penetrating the Greenland ice-mantle are found some few stragglers of the Greenland flora.

Tempting as it is to regard plants as thermometers of past ages and to amuse ourselves by drawing up temperatures read by glimpses through the 'corridors of time,' interesting enough as it is to contrast these extinct types with their supposed living relatives, or to go more minutely into the subject and search with the microscope in transverse sections of Carboniferous trees for evidence of buried seasons, yet we cannot be too careful to remember we have in fossil plants only one link—and that, too often, an imperfect one—in the chain of evidence which leads us to conclusions as to climates of ages past.

NOTE—LEPIDOPTERA.

Hybernia leucophearia var. nigricaria at Doncaster.—I have taken a form of *Hybernia leucophearia* here that appears to me to be peculiar. It is of the following description—Upper surface: Fore-wing, almost entirely sooty black, slightly paler and ochreous about the disc; the costa, inner margin, discoidal spot and two transverse lines, rather darker—not a trace of hind-marginal pale spots; hind-wing, without markings, dark gray. Under surface: Entirely without markings, slightly nacreous, dark gray; the nervures rather darker. I have only seen one of this form, or anything approaching to it.—H. H. CORBETT, 19, Hallgate, Doncaster, March 31st, 1891.

—This is the variety *nigricaria*, and so far as I know has not previously been reported from Yorkshire. It is one of the very few melanic forms which seem to occur more commonly in the South of England than in the north. A well-known London locality is Richmond Park, where in some seasons it is not at all uncommon, and from where I have specimens in my own cabinet.—G. T. PORRITT.

NOTES AND NEWS.

The Italian journal 'La Notarisia,' in its No. 23, 28 Febbraio 1891, contains a paper by Mr. Wm. West, F.L.S., of Bradford, on the 'Conjugazione delle Zignemee,' illustrated by a couple of plates by himself and his son.

An appreciative obituary notice of the late Dr. H. B. Brady, F.R.S., giving a succinct and interesting sketch of his life and scientific career, appears in the March number of the Annals and Magazine of Natural History, to which he has so often contributed.

At the last anniversary meeting of the Geological Society of London, Mr. Wilfred H. Hudleston, M.A., F.R.S., was elected a Vice-President, and Messrs. Alfred Harker, M.A., and James W. Davis, F.S.A. (Mayor of Halifax), were chosen as Members of the Council.

In the Transactions of the Rochdale Literary and Scientific Society, vols. 1 (1878-1888) and 2 (1889-1890), we are pleased to observe some interesting papers of local value. Mr. R. Law, F.G.S., has a note on bones of extinct pleistocene animals in a Cave at Matlock, Mr. W. Watts, F.G.S., discourses on Swallows as observed at upwards of 700 ft. alt. in the Pennine range, Dr. T. Hunt treats upon the 'Roses of Ashworth,' Mr. S. S. Platt describes the paving-stones used at Rochdale, Mr. C. R. Beaumont narrates 'A Ramble round Daisy Nook,' and Mr. J. R. Ashworth gives useful tables of thermometrical observations of air and water at Cowm and Spring Mill Reservoirs.

Among the elections to the Fellowship of the Entomological Society of London during the past few months we have been pleased to note the following North-country names:—John Gardner (Hartlepool), S. J. Capper, F.L.S. (Liverpool), J. E. Robson (Hartlepool), A. E. Hall (Sheffield), Sir Vauncey Harpur-Crewe, Bart. (Calke Abbey), and Mr. G. A. Booth (Grange-over-Sands).

The 58th annual meeting of the Entomological Society of London was held on Wednesday, 21st January, Lord Walsingham, M.A., F.R.S., President, in the chair. The following gentlemen were elected as Officers and Council for 1891—President, Mr. Frederick DuCane Godman, M.A., F.R.S.; Treasurer, Mr. R. M'Lachlan, F.R.S.; Secretaries, Mr. Herbert Goss, F.L.S., and the Rev. Canon Fowler, M.A., F.L.S.; Librarian, Mr. Ferdinand Grut, F.L.S.; and as other members of the Council, Prof. R. Meldola, F.R.S., Mr. Edward Saunders, F.L.S., Dr. David Sharp, F.R.S., Mr. Richard South, Mr. H. T. Stainton, F.R.S., Col. C. Swinhoe, F.L.S., Mr. G. H. Verrall, and the Rt. Hon. Lord Walsingham, M.A., F.R.S. It was also announced that the new President had appointed Lord Walsingham, Prof. Meldola, and Dr. Sharp, Vice-Presidents for the session 1891-92. Lord Walsingham, the retiring President, then delivered an address.

An examination of the current list of Fellows of the Entomological Society with reference to their geographical distribution shows that of our eleven northern counties five are quite without, viz.—Nottinghamshire, Westmorland, Cumberland, Northumberland, and the Isle of Man. Lincolnshire has one, at Lincoln; Durham has three, two resident at Hartlepool and one near Darlington; Cheshire also has three, one at Chester, one at Sale, and one near Stockport; Derbyshire has four, one at Calke Abbey and three at Burton-on-Trent; Lancashire possesses seven, being two each at Liverpool and Manchester, and one each at Warrington, Preston, and Accrington; while Yorkshire can boast of as many as eleven, two each at Leeds, Sheffield, and Huddersfield, and one each at Barnsley, Beverley, Knottingley, Hornsea, and near Ripon. The smallness of all these figures tends to show that the premier entomological society of the kingdom, one which can confer a title (F.E.S. to wit), is not adequately supported in our district, unless we admit that scientific entomology is but a feeble force in the North. Against this last supposition we may, however, place the evidence which our bibliography (see opposite page) gives as to the activity of entomological investigators within our field of study.

BIBLIOGRAPHY:

Papers and Records published with respect to the Natural History and Physical Features of the North of England.

LEPIDOPTERA, 1889.

THE present instalment includes some titles of previous years which have hitherto escaped record, and contains a few contributed by Mr. T. D. A. Cockerell, to whose vigilance the Editors have often been indebted for assistance of this kind. Previous instalments of the Bibliography of Lepidoptera have appeared as follows:—For 1884, Nat., July 1885, p. 285; for 1885, 1886, and 1887, Nat., Feb. 1888, p. 58; for 1888, Nat., Sep. 1890, p. 279.

The counties for which the bibliographic record is made are Cheviotland (=Northumberland North), Northumberland South, Durham, York (N.W., N.E., S.E., S.W., and Mid W.), Lincolnshire (N. and S.), Notts., Derbyshire, Cheshire, Lancashire (S. and W.), Westmorland with Furness, Cumberland, and the Isle of Man.

ANON. [not signed]. **Lanc. S. and Cheshire.**

Liverpool Science Students' Association [re-appearance in Liverpool district (after 18 years' absence) of *Deilephila galii*, noted by J. Mackarell]. Research, Feb. 1889, p. 138.

ANON. [signed 'H.J.C.'] **Durham.**

Clouded Yellow Butterfly [*Colias edusa*] **in Durham** [seen Sep. 2nd, 1889]. Field, Sep. 28, 1889, p. 476.

ANON. [signed 'W.B.B.']. **York S.W.**

Ackworth School Natural History [Notes: *Smerinthus populi* noted as found at Potteric Car]. Nat. Hist. Journ., Nov. 15th, 1889, p. 148.

R. ADKIN. **York S.W. and N.E.**

[Exhibition of Noctua glareosa Esp. **from Barnsley, York,** etc., to South Lond. Ent. Soc., Jan. 10th, 1889]. Ent. Mo. Mag., Feb. 1889, xxv. 216; Ent., Feb. 1889, xxii. 51; Young Nat., Feb. 1889, p. 37.

R. ADKIN. **'West Yorkshire.'**

[Lobophora halterata (hexapterata) bred from larvæ taken in West Yorkshire, where it appears to be abundant]. South Lond. Ent. Soc., June 27th, 1889; Ent., Aug. 1889, xxii. 216; Ent. Mo. Mag., Sep. 1889, xxv. 386; Young Nat., Aug. 1889, p. 173.

R. ADKIN. **Isle of Man, 'Lake District.'**

[Polia xanthomista v. nigrocincta, Isle of Man; *Cidaria reticulata* and *Emmelesia taeniata*, Lake District, exhibited]. Proc. Ent. Soc. Lond., Nov. 6th, 1889, p. xlvi.; Ent., Dec. 1889, xxii. 309; Ent. Mo. Mag., Dec. 1889, xxv. 460; Young Nat., Dec. 1889, p. 249; Zool., Dec. 1889, p. 459.

J. ARKLE. **Cheshire.**

Early Appearance of Phigalia pedaria [(=*P. pilosaria*) male, at Chester, Jan. 19th, 1889, after a warm winter]. Ent., April 1889, xxii. 113.

J. ARKLE. **Cheshire.**

Deilephila galii in Cheshire [two taken near Chester in 1889]. Ent., Aug. 1889, xxii. 211.

J. ARKLE. **Cheshire.**

Luperina testacea, var. ? gueneei [amongst the scores taken on Chester gas-lamps was only one of var. *gueneei*]. Ent., Sep. 1889, xxii. 235.

J. ARKLE. **Cheshire.**

Natural Pairing of Amphidasys betularia and var. doubledayaria [in Delamere Forest; 85 per cent. of insects bred from this union were black]. Ent., Sep. 1889, xxii. 236.

J ARKLE. **Cheshire.**

Parasites on Lepidoptera [red mites on a *Caradrina cubicularis*, taken 23rd July, 1889, off a Chester gas-lamp]. Ent., Oct. 1889, xxii. 262.

J. ARKLE. **Cheshire, Lanc. W., Westmorland.**

Notes from the North-West Counties [being detailed accounts of 1889 observations at Delamere Forest, at Chester, at Wallasey, at Heysham Moss near Morecambe, at Witherslack, and at Morecambe; numerous species mentioned]. Ent., Dec. 1889, xxii. 291-299.

C. G. BARRETT. **Cumberland.**

Notes on some very Old Specimens of Lepidoptera [in coll. Rev. H. Burney; one is a genuine *Heliothis scutosa*, one of the two taken fifty years ago near Carlisle by Heysham]. Ent. Mo. Mag., March 1889, xxv. 225.

T. BAXTER. **Lanc. W.**

Deilephila galii in Lancashire [three caught July 27th and 28th, at St. Anne's-on-Sea, a larva there Sep. 27th, and seven larvæ at Lytham]. Ent., Feb. 1889, xxii. 47.

R. C. BINDLEY. **Derbyshire.**

Deilephila galii in Derbyshire [a male and female taken in Mickleover Vicarage garden, 21st July, 1888; record also of *Sphinx convolvuli* taken near there in 1884]. Ent., Jan. 1889, xxii. 14.

R. C. BINDLEY. **Derbyshire.**

Sphinx Convolvuli [in] Derbyshire [one found asleep at Mickleover near Derby, Aug. 1889]. Ent., Nov. 1889, xxii. 280.

J. W. BOULT. **York, S.E.**

Lycæna icarus, hermaphrodite [at Keyingham, 22nd June, 1889; described]. Ent., Aug. 1889, xxii. 211.

W. D. BRAITHWAITE. **York S.W.**

Ackworth School Excursions [larva of Scalloped Oak (*Crocallis elinguaria*) at New Park Spring, May 22nd, 1889]. N. H. J., Oct. 15, 1889, xiii. 125.

SAMUEL JAMES CAPPER. **Cheshire.**

Deilephila galii in Cheshire [on Wallasey sand-hills; account of rearing twenty larvæ]. Ent., Jan. 1889, xxii. 14.

S. J. CAPPER [President]. **Cheshire.**

Liverpool Entomological Society [presidential address: abundance of *Deilephila galii* at Wallasey in 1888 referred to]. Research, Mar. 1889, p. 156.

H. J. CARPENTER. **Durham.**

Colias Edusa [near Durham, one seen 2nd Sep. 1889]. Ent., Oct. 1889, xxii. 256.

J. T. CARRINGTON. **'Yorkshire.'**

[Tæniocampa populeti, Rannoch specimens being shown, Mr. Carrington remarked that the same form was taken in Yorkshire]. South Lond. Ent. Soc., April 25th, 1889; Young Nat., June 1889, p. 130; E. M. M., June 1889, xxv. 311.

J. W. CARTER. **York, Mid W.**

The Mildness of the Season [near Bradford, has not as yet produced *Phigalia pilosaria*, *Hibernia leucophæaria* and *H. progemmaria*, which in 1884 appeared on 16th, 20th, and 20th Jan.]. Young Nat., Feb. 1889. p. 44.

ABEL CHAPMAN. **Northumberland S.**

Bird-Life of the Borders [with note at p. 50 as to *Colias edusa* June 15, 1877, on Redewater, and as to occurrence of *Saturnia carpini* on the moors].

JOSEPH CHAPPELL. **Lanc. W.**

Lycæna argiades at Blackpool [found by Joseph Clegg about 25 years ago, and after figuring as *L. bætica* in Chappell's collection, determined by J. Cosmo Melvill to be *L. argiades*]. Young Nat., Feb. 1889, p. 43.

JOSEPH CHAPPELL. **Cheshire or Lanc. S.**

Abnormal Hybernia progemmaria [found near Stalybridge; male wings and female antennæ on one side, female wings and male antennæ on the other]. Young Nat., March 1889, p. 61.

JOSEPH CHAPPELL. **Lanc. S.**

Amphidasys betularia, buff var. [in the Middleton district near Manchester; black var. common, buff one rare]. Ent., April 1889, xxii. 113.

J. E. CLARK. **York N.E.**

York, Bootham. Natural History Club [*Grapta C-album* used to occur at Langwith]. Nat. Hist. Journ., Nov. 15th, 1889, p. 151.

H. SHORTRIDGE CLARKE. **Isle of Man.**

Report of the Entomoloical Section [of the Isle of Man N.H. Society; gives a list of 33 species (with a few localities) additional to the Manx list, which now includes 23 butterflies and 293 moths]. Yn Lioar Manninagh, No. 2, April 1889, i. 62.

JOSEPH COLLINS. **Lanc. S.**

C[olias]. Edusa near Liverpool [at Hale, a male seen 1st Sep., not caught]. Young Nat., Oct. 1889, p. 213.

WALTER COPLEY. **York S.W.**

Deilephila galii in Yorkshire [fine male at Sowerby Bridge, 12th Aug., 1889]. Ent., Sep. 1889, xxii. 234.

W. CROUCH. **Cheshire.**

[Exhibition of Saturnia carpini found at about 2,000 ft., nearly at top of Shutlingslowe, Cheshire]. Essex Nat., Dec. 1888, ii. 267.

C. W. DALE. **Cumberland, Linc. N. or S., Isle of Man, York S.E., Northumberland, Durham.**

The History of our British Butterflies [issued as a separately paged appendix in successive numbers of the 'Young Naturalist,' and entering in a detailed manner into the life-history, variation, and range of each species; *Melitæa aurinia*(=*artemis*)—writer has a small specimen from Carlisle similar to the Irish form (p. 203); in Cumberland it is abundant at the Brick House, Saburgham, the larvæ from this bleak place producing very small dark specimens, and also some beautiful varieties with large canary-coloured spots on the fore wings (p. 207); *Cyclopides paniscus* occurs rarely in Lincolnshire: W. Fowler's record of it (Ent. 1882, xv.) for a wood about seven or eight miles from Lincoln repeated (p. 209); *Hesperia comma* is absent from Isle of Man, and rare in Yorkshire (p. 212); Hull neighbourhood recorded by Dale, in Morris's Brit. Butterflies, 1853 (p. 213); *Hesperia sylvanus* is apparently unknown in Northumberland (p. 214); *H. linea* is absent from Durham and Northumberland, and Isle of Man (p. 216); *Syricthus alveolus* near Newcastle, common (Stephens' Ill., 1828) (p. 225)]. Young Nat., Jan. 1889, pp. 203, 207; Feb. 1889, pp. 209, 212, 213, 214, 216; and April 1889, p. 225.

JOHN W. ELLIS. **Lanc. S. and W., Cheshire, Furness.**

Lepidopterous Fauna of Lancashire and Cheshire [treats of Tortricina, of which 209 species are included]. Nat., Jan. and Feb. 1889, pp. 25-43.

Cheshire, Durham, Lanc. W. and S., Cumberland, Derbyshire, York Mid W.

J. W. ELLIS.

Observations on the Unusual Abundance in 1888 of the Madder Hawk Moth (*Deilephila galii*) [especially dealing with its occurrence on the Wallasey sand-hills, and giving a list of occurrences and dates throughout the kingdom, including some records unpublished elsewhere; reference also made to *Taeniocampa opima* on the Wallasey sand-hills]. Research, June 1889, pp. 221-222.

H. FRIEND. **Cumberland.**

Local Butterflies [in Cumberland; larva of *Erebia cassiope* taken on Great Gable, May 27th, 1889, by George Dawson, and *Cœnonympha davus* at Todhill Moss near Carlisle, June 13th]. Wesl. Nat., July 1889, p. 158.

JOHN GARDNER. **Durham.**

Sphinx convolvuli at Hartlepool [one 'to-day,' date not otherwise stated]. Young Nat., Sep. 1889, p. 180.

C. S. GREGSON. **Isle of Man.**

[E[ubolia]. Cervinata [and its food-plants, hollyhock and mallow; Isle of Man]. Young Nat., Feb. 1889, p. 44.

C. S. GREGSON. **Lanc. S.**

Plusia Ni [taken some 18 years ago off St. George's Church wall, Liverpool]. Young Nat., Feb. 1889, p. 44.

C. S. GREGSON. **Cheshire, Lanc. S.**

Spring Notes [record of blank days at Bidston, Formby; larvæ of *Epunda lichenea* at Formby; *Taeniocampa opima* at Wallasey sand-hills; dates given]. Young Nat., June 1889, p. 133-134.

C. S. GREGSON. **Cheshire.**

Deilephila Galii at Wallasey [a larva found 'yesterday,' but date not given]. Young Nat., Oct. 1889, p. 213.

J. T. GUMMERSALL. **Lanc. S.**

Convolvulus Hawk Moth and Caterpillar [*Sphinx convolvuli*] taken during August [1889, at Penketh]. Nat. Hist. Journ., Sep. 15th, 1889, xiii. 111.

A. E. HALL. **York S.W.**

Calocampa solidaginis [description of its locality near Sheffield]. Ent., Jan. 1889, xxii. 15.

A. E. HALL. **York S.W.**

Caradrina quadripuncta [common at Sheffield in winter]. Ent., Aug. 1889, xxii. 212.

WM. HEWETT. **'York.'**

Acidalia inornata [and *A. aversata* near York; former commoner than is supposed]. Young Nat., Nov. 1889, p. 231.

J. F. HILLS, Sec. **York N.E.**

York, Botham. Natural History Club [first *Anthocharis cardamines* seen at Overton, 14th May, 1889]. Nat. Hist. Journ., June 15th, 1889, xiii. 86.

J. B. HODGKINSON. **Lanc. S. or W.**

Nepticula minusculella [notes on breeding it in 1887 to 1889; locality not stated, probably near Preston]. Ent., June 1889, xxii. 164.

J. B. HODGKINSON. **Lanc. W.**

Trifurcula pallidella [a male taken ten years ago; a female at Dutton 'yesterday,' but no date given]. Ent., Aug. 1889, xxii. 212.

MR. JÄGER. **Isle of Man.**

[Manx examples of Polyommatus phlœas, and a small dark form of *Pieris napi*, which latter J. T. Carrington said was unusually dark in that locality]. South Lond. Ent. Soc., Sep. 26th, 1889; Ent., Nov. 1889, xxii. 286; Ent. Mo. Mag., Nov. 1889, xxv. 436; Young Nat., Nov. 1889, x. 229.

P. M. C. K[ERMODE]. **Isle of Man.**

Phenological Observations [giving Manx dates for *Pieris rapæ*, *Lycæna alexis*, and *Vanessa cardui*]. Yn Lioar Manninagh, No. 2, Ap. 1889, i. 64-65.

H. WALLIS KEW. **Linc. N.**

Field Notes. No. 1. In the Woods [near Louth] in Spring [of 1885: *Lycæna phlæas* and *Argynnis euphrosyne* noted in Burwell and Haugham Woods]. Nat. World, Jan. 1886, iii. 1-2.

H. WALLIS KEW. **Linc. N.**

Field Notes. No. 5. Old Chalk-pits [near Louth; *Epinephile hyperanthus*, *Pamphila sylvanus*, *Melanargia galathea*, *Chortobius pamphilus*, *Lycæna phlæas*, *Vanessa atalanta* noted]. Nat. World, Sep. 1886, iii. 81-82.

H. WALLIS KEW. **Linc. N.**

Lincolnshire Marsh Drains [at Saltfleetby; *Vanessa urticæ* and *V. atalanta* noted July 16th, 1886]. Nat. World, Oct. 1886, p. 183.

W. F. KIRBY. **York S.E.**

[Gynandromorphous Lycæna icarus (alexis) caught at Keyingham, East Yorkshire, 22nd June, 1889, by T. Brown; described]. Proc. Ent. Soc. Lond., Nov. 6th, 1889, Part 3, p. xlvi.; Ent., Dec. 1889, xxii. 309; Ent. Mo. Mag., Dec. 1889, xxv. 459; Young Nat., Dec. 1889, p. 248; Zool., Dec. 1889, p. 458.

W. KEMPSTER MANN. **Cumberland.**

A Few Notes on Heliothis scutosa [one taken in 1833 near Dalston, Carlisle, and another on the coast near Shinburness in Aug. 1834; particulars given and authenticity discussed]. Proc. Bristol Nat. Soc., New Series, vol. 6, part 1, 1888-9 (pub. 1889), pp. 34-35.

A. H. MARTINEAU. **York Mid W.**

Birmingham Natural History and Microscopical Society [Exhibition of '*Attacus pavonia major* (the Great Emperor Moth)' from Ilkley; doubtless *Saturnia carpini* is meant]. Midl. Nat., Oct. 1889, p. 244.

T. G. MASON. **Lanc. S.**

Sphinx convolvuli [seen at Didsbury, Manchester, 24th to 26th Aug., 1889]. Ent., Oct. 1889, xxii. 259.

J. COSMO MELVILL. **Lanc. S., Cheshire.**

Insecta [of Manchester district]. . . II. Lepidoptera [enumerated, with remarks, in systematic order, omitting ubiquitous species only]. Handbook of Manchester.—Prepared by the Local Committee for the members of the British Association at the Manchester Meeting, 1887, pp. 50-51 and 62-75.

H. MURRAY. **Westmorland, Furness, or Lanc. W. (? which).**

Cidaria reticulata [near Carnforth or Windermere; experience of its capture, and prognostications of its early extinction]. Ent., Jan. 1889, xxii. 16, and erratum, Feb., p. 50; Young Nat., Jan. 1889, x. 14.

H. MURRAY. **Westmorland, Furness, Lanc. W. (? which).**

Penthina postremana [series bred from *Impatiens noli-me-tangere* during 1888, near Carnforth]. Ent., Jan. 1889, xxii. 16.

H. MURRAY. **Isle of Man.**

Polia ne[*sic*]**grocincta, D[ianthæcia]. Cæsia, &c.** [*Epunda nigra*. *Sciaphila colquhounana*, and *Sciaphila penziana* in the Isle of Man, June]. Young Nat., Oct. 1889, p. 213.

H. MURRAY. **Lanc. W.**

Stilbia anomala in Lancashire [near Carnforth, a female taken, Aug. 1889]. Ent., Oct. 1889, xxii. 260.

H. MURRAY. **Lanc. W., Isle of Man.**

Cidaria reticulata, long in pupa [proved by observations made at Carnforth; *Eupithecia venosata* noted as bred this year from Manx larvæ taken June 1887]. Ent., Oct. 1889, xxii. 261.

R. NEWSTEAD. **Cheshire.**

Colias edusa in 1889 [near Chester, Aug., and several at Shotwick, Cheshire]. Ent., Nov. 1889, xxii. 279.

F. N. PIERCE. **Cheshire.**

Deilephila galii at Wallasey [larvæ reported, but on investigation turned out to be only *Macroglossa stellatarum*, which was abundant]. Young Nat., Nov. 1889, p. 231.

F. N. PIERCE. **Lanc. S. or Cheshire.**

Colias edusa [near Liverpool in fair numbers in 1889]. Young Nat., Nov. 1889, p. 232.

F. N. PIERCE. **Lanc. S. or Cheshire.**

Spinx convolvuli [a few occurred about Liverpool in 1889]. Young Nat., Nov. 1889, p. 233.

GEORGE T. PORRITT. **York S.W.**

Scoparia ingratalis in Yorkshire [near Huddersfield, along with *S. pyralalis*; never before known anywhere than in the extreme South of England]. Nat., Jan. 1889, p. 5.

G. T. PORRITT. **York S.W.**

[Melanic Boarmia repandata from Huddersfield, compared with Hebridean specimens; R. M'Lachlan remarking that melanism is more prevalent in Yorkshire and North Midlands than further North in Britain.] Proc. Ent. Soc. Lond., Feb. 6th, 1889, p. ii; Young Nat., March 1889, p. 57; Zool., Mar. 1889, p. 114; E.M.M., Mar. 1889, xxv. 240; Ent., Mar. 1889, xxii. 79.

GEO. T. PORRITT. **Isle of Man.**

Description of the Larva of Homœosoma nimbella [found Aug. 16, 1887. feeding commonly in wild chamomile flowers on the rocks near Douglas, Isle of Man]. Ent. Mo. Mag., April 1889, xxv. 245.

G. T. PORRITT. **York S.W.**

[Remarkable variation in a brood of Arctia mendica bred from eggs found at Grimescar, Huddersfield]. Proc. Ent. Soc. Lond., July 3rd, 1889, p. xxviii.; Ent. Mo. Mag., Aug. 1889, xxv. 364; Ent., Aug. 1889, xxii. 215; Young Nat., Aug. 1889, p. 171; Zool., Aug. 1889, p. 317.

GEORGE T. PORRITT. **York S.W.**

Notes on an Extraordinary Race of Arctia mendica, Linn. [bred from batches of larvæ found at Grimescar, near Huddersfield the coloured plate gives figures of three males and fifteen females, all different in markings]. Trans. Ent. Soc. Lond., 1889, part 3 (Oct.), pp. 441-442, and plate xiv.

E. G. POTTER. **York Mid W.**

Acronycta alni near York [netted at Askham Bog, June 13, 1889]. Ent., July 1889, xxii. 187.

S. R[AYNER]. **Yorkshire.**

Cures for Warts [long-haired caterpillars found in hedges and called 'Tommy Tailyers,' when found, thrown over heads for luck: probably larvæ of some of the *Arctiæ*]. Yorksh. Folk Lore Journ., Part 2, Jan. 1886, p. 21.

JOHN E. ROBSON. **Lanc. S., Durham.**

Notable Lepidoptera in 1888 [scarcity of *Pieris brassicæ*, *P. rapæ*, *P. napi*, *Vanessa cardui*, *Anthocharis cardamines* after the abundance of 1887 in co. Durham; numerous larvæ of *Deilephila galii* at Risley Moss near Warrington]. Young Nat., Jan. 1889, pp. 1-4.

JOHN E. ROBSON. **Durham.**

Note on Eubolia cervinata [formerly common near Hartlepool, now scarce, from diminution of its food-plant, *Malva sylvestris*]. Young Nat., Jan. 1889, 15.

E. ROBSON. **York S.W.**

Varieties of Arctia mendica [taken in 1888 and 1889 near Huddersfield; described]. Young Nat., Oct. 1889, p. 214.

J. E. ROBSON. **Durham.**

Acidalia inornata [a few miles from Hartlepool, only twice met with, in 1888 and 1889]. Young Nat., Nov. 1889, p. 231.

J. T. RODGERS. **Lanc. S.**

Amphidasys betularia, var. [remarks on the relative prevalence of the type and black variety, and on the results of breeding from a cross between them, all in South Lancashire]. Ent., Feb. 1889, xxii. 49.

RUPERT B. SANDERSON. **Cumberland.**

The "Bustard" [local, or perhaps anglers', name for a large moth, good bait for Trout at Wigton, Cumberland, on rivers Calder, Waver, and Wampool; it is a large moth, which rises in immense numbers about 9 o'clock every evening]. Land and Water, Nov. 12th, 1887, p. 435.

W. E. SHARP. **Cheshire.**

Some further remarks on D[eilephila]. Galii [partly based on Cheshire information]. Young Nat., Oct. 1889, pp. 203-206.

BERNARD SMITH. **York S.W.**

Notes on the Notodontidæ. . . No. 5.—*Lophopteryx carmelita* and *Notodonta dictæoides* [the latter, supposed to feed exclusively on birch, near Doncaster is found on aspens]. Ent., April 1889, xxii. 102.

RICHARD SOUTH. **Lanc. W.**

Luperina testacea var. nickerlii, Freyer [taken at St. Anne's-on-Sea, close to water's edge, Aug. 1st, no specimen of type appearing till 10th; full description given]. Ent., Nov. 1889, xxii. 271-272; abstracts also in Proc. Ent. Soc. Lond., Oct. 2, 1889, part 3, p. xl.; Ent. Mo. Mag., Nov. 1889, xxv. 438; Ent., Nov. 1889, xxii. 286; Young Nat., Nov. 1889, p. 228; Proc. South Lond. Ent. Soc., Oct. 10, 1889; Ent., Nov. 1889, xxii. 287.

H. T. STAINTON. **Westmorland or Furness, 'York.'**

Chrysoclista bimaculella; its variability in markings and size [the remarks based in part on specimens from Windermere and York]. Ent. Mo. Mag., Jan. 1889, xxv. 169-170.

C. E. STOTT. **Lanc. S.**

Dicranura vinula [records of dates of breeding from eggs laid by a female taken in copulâ on Blackpool sand-hills]. Ent., Nov. 1889, xxii. 281.

JOHN THORPE. **? Lanc. S.**

Amphidasys betularia, buff var. [a history of the breeding of it from a buff female taken in 1874; the buff form has not been bred since 1880]. Ent., June 1889, xxii. 162.

W. H.] TUGWELL. **Isle of Man.**

[Dark variety of Dianthæcia cæsia, Isle of Man, exhibited to South Lond. Ent. Soc., 12th Jan., 1888]. Young Nat., Feb. 1888, p. 38; Ent. Mo. Mag., Feb. 1888, xxiv. 216; Ent., Feb. 1888, xxi. 70.

W. H. TUGWELL. **York S.W.**

[Exhibition of forms of Hypsipetes sordidata Fb. (i.e. *H. elutata*) bred from Huddersfield larvæ, to South Lond. Ent. Soc., Dec. 13th, 1888]. Ent. Mo. Mag., Jan. 1889, xxv. 187; Ent., Jan. 1889, xxii. 24; Young Nat., Jan. 1889, x. 13.

W. H. TUGWELL. **Cheshire.**

Notes on the probable origin ['blown over'] of last year's *Deilephila Galii*, W. V. [measurements of Liverpool and other specimens cited in evidence]. Young Nat., May 1889, pp. 113-115; Ent. Mo. Mag., May 1889, xxv. 284.

W. H. TUGWELL. **Cheshire.**

Notes on the uncertain abundance of many Lepidoptera [with passing references to the Cheshire occurrences in 1888 of *Deilephila galii* larvæ]. Young Nat., July 1889, p. 145.

W. H. TUGWELL. **Yorkshire, Durham, Cheshire, Lancashire.**

Note on Deilephila Galii [in reply to W. E. Sharp; occurrences discussed; Wallasey sand-hills in particular]. Young Nat., Nov. 1889, pp. 225-227.

J. HORSFALL TURNER. **York N.E.**

Runswick [Folk-Lore; cure for hooping-cough, catch a live hairy worm (woolly boy) and hang it in a bag from the child's neck, and the cough will waste with the worm (no doubt larva of a species of Arctia)]. Yorkshire Folk-Lore Journ., part 12, July 1888, p. 232.

J. W. TUTT. **Durham, York S.W., S.E., Mid W., Lanc. W., Isle of Man, Derbyshire, Notts., Northumb. S.**

Contributions towards a List of the Varieties of Noctuæ occurring in the British Islands [*Xylophasia monoglypha* Hufn. = *polyodon* L., vars. *obscura* mihi (Barnsley), *brunnea* mihi (do.), *infuscata* White (Barnsley, Fleetwood, Hartlepool), and *æthiops* Staud. (Lancashire coast)]. Ent., Feb. 1889, xxii. 41-43. [*Xylophasia rurea* F., type (Isle of Man), var. β *intermedia* mihi (Barnsley, Hull, Derby), var. γ *flavorufa* mihi (Barnsley, Ripon), var. δ *putris* (Huddersfield = v. *borealis* of Porritt's Yorkshire list)]. Ent., March 1889, xxii. 58-61. [*Xylophasia hepatica* var. *characterea* Hüb., Barnsley; *X. scolopacina*, a specimen captured by Harrison near Barnsley, slightly glaucous, but otherwise like type]. Ent., April 1889, xxii. 94-95. [*Charæas graminis* var. *gramineus* Haw., Yorkshire (p. 154); of the species, red and grey forms in both sexes occur in the Huddersfield district (p. 153); var. *rufa* mihi, Yorkshire (p. 154); var. *tricuspis* Esp., Morpeth (p. 154); var. *hibernicus* Curt., Mr. Gregson (Ent., iv. 51) records it from Staleybridge Brushes (p. 155); var. *obsoleta* mihi, from Mr. Finlay of Morpeth, and obtained by Mr. Harrison of Barnsley (p. 155); var. *pallida* mihi, Yorkshire (p. 155)]. Ent., June 1889, xxii. pp. 153-155. [*Luperina cespitis* Fab., smallness of Lancashire specimens; *L. testacea* Hb., melanic tendency in Lancashire, Hartlepool, and Barnsley, variation to very brown; var. *obsoleta* mihi, Hartlepool, J. E. Robson; a pale yellowish form near Huddersfield, Porritt; var. *cinerea* mihi, Lancashire, Hartlepool; var. *nigrescens* mihi, Fleetwood, Hartlepool; *Mamestra abjecta* Hb., var. *variegata* Stdgr., near Hartlepool, Robson; var. *fribolus* Bdv., Fleetwood]. Ent., Aug. 1889, xxii. 204-210. [*Mamestra albicolon* Sepp, the dark type at Fleetwood; the specimens taken on the sand-hills at the mouth of the Humber through a series of years by N. F. Dobrée have the dark form predominant]. Ent., Sep. 1889, xxii. p. 232. [*Mamestra brassicæ* L. var. γ *unicolor* mihi, Nottingham; var. δ *albidilinea* Haw., bred from pupæ sent by Mottershaw of Nottingham (p. 251); *Apamea basilinea* Fab., Huddersfield and Hartlepool specimens differ in ground colour from Southern English; var. *unicolor* mihi, Huddersfield, Porritt's remarks quoted (p. 254); var. *cinerascens* mihi, Hartlepool (p. 255); var. *finitima* Gm., Yorkshire and Newcastle (255)]. Ent., Oct. 1889, xxii. 251-255. [*Apamea connexa* Bork., Harrison and Young's Yorkshire specimens described]. Ent., Nov. 1889, xxii. 276. [*Apamea gemina* Hb., specimens taken by Mr. Newman of Darlington referred to as very dark; variations from Morpeth (Finlay), Huddersfield (Porritt), Liverpool (Gregson) treated of]. Ent., Dec. 1889, xxii. 302-305.

J. W. TUTT. **York S.W., N.E., 'Lake District,' Durham.**

The Pterophorina of Britain [with a quotation from Porritt, Ent., xv. 262, that *Pterophorus serotinus* occurs continuously from May to October near Huddersfield]. Young Nat., July 1889, p. 150. [*Chrysocorys festaliella* at Scarborough and Lake District]. Young Nat., Sep. 1889, p. 178. [*Agdistes bennetii* at Hartlepool noted]. Young Nat., Oct. 1889, pp. 198-199. [Non-appearance at Saltburn of *Pterophorus bertrami* and *P. dichrodactylus* dealt with]. Young Nat., Nov. 1889, p. 224.

C. J. WAINWRIGT. **Notts.**

[Euperia fulvago, Sherwood Forest, exhibited]. Birm. Ent. Soc., Oct. 21, 1889; Ent. Mo. Mag., Dec. 1889, xxv. 458.

LORD WALSINGHAM. **Westmorland and Furness.**

[Preserved larvæ and imago of *Cidaria reticulata*, Lake District, Hodgkinson]. Proc. Ent. Soc. Lond., Oct. 2nd, 1889, part 3, p. xliii.; Ent. Mo. Mag., Nov. 1889, xxv. 438; Ent., Nov. 1889, xxii. 286; Young Nat., Nov. 1889, p. 228; Zool., Nov. 1889, p. 440.

N. E. WARNE. **Cumberland.**

[Cœnonympha typhon from Cumberland; on under side it differed (like most English specimens) from the unicolorous Scotch forms]. South Lond. Ent. Soc., July 11th, 1889; Ent., Aug. 1889, xxii. 216; Ent. Mo. Mag., Sep. 1889, xxv. 387; Young Nat., Aug. 1889, p. 174.

W. WARREN. **? Durham.**

[Exhibition of Eupithecia jasioneata and *Gelechia confinis* bred by Mr. Gardner of Hartlepool]. Proc. Ent. Soc. Lond., June 5th, 1889, Part 3, xxiv.

J. R. WELLMANN. **Isle of Man.**

[Sesia musciformis bred from Manx pupæ]. South Lond. Ent. Soc., July 25th, 1889; Ent., Sep. 1889, xxii. 239; Ent. Mo. Mag., Sep. 1889, xxv. 387; Young Nat., Sep. 1889, p. 183.

A. WOODS. **Durham.**

Chærocampa celerio at Hartlepool [on Oct. 1st, 1889]. Ent., Nov. 1889, xxii. 281.

A. WOODS. **Durham.**

C[hærocampa]. celerio at West Hartlepool [found Oct. 1st, 1889]. Young Nat., Nov. 1889, p. 231.

NOTES—ORNITHOLOGY.

Brambling and Goosander near Ripon.—A male and female Brambling (*Fringilla montifringilla*) were shot here yesterday, amongst a flock of sparrows. Also a male and female Goosander (*Mergus merganser*) were shot by the river at Norton Conyers, in this neighbourhood, in the last week of December.—R. A. SUMMERFIELD, North Stainley Vicarage, Ripon, January 2nd, 1891.

Yellow Wagtails at Ghaistrills, Wharfedale.—I was at Grassington on the 16th inst., with Mr. W. Denison Roebuck, and witnessed a large immigration of *Motacilla raii*; they were making their way up the Wharfe, and a dozen or more were frequently in sight at once; their numbers appeared to be undiminished during the whole time I watched them—probably about an hour.—EDGAR R. WAITE, The Museum, Leeds, May 25th, 1891.

Birds and Snow in May (Harrogate).—It may be interesting to record an experience I had on the 17th inst. I was in the neighbourhood of Harrogate, and the day opened with the thermometer standing at 14°, or in other words, it registered 18° degrees of frost. About noon a heavy fall of hail and snow took place, which covered the ground to a depth of two inches in some places. The ground was very hard, and although the sun afterwards shone, it had not much effect on the snow, and traces of it were to be found on the north side of the fences next day. The behaviour of the birds during the storm was noteworthy—Starlings left their nesting-places and flew about in large flocks, while Chaffinches, Greenfinches, Sparrows, and Buntings flew hither and thither, evidently quite bewildered by the blinding snow. But the procedure of the Lapwings was even more remarkable. Shortly after the snow had commenced falling they left the ground, and flocking together, began to rise in the air, ascending in circles until they attained a great height, and no doubt overtopped the snow-cloud. Their cries were heard long after they had disappeared from sight. When the snow ceased falling they returned to the snow-covered ground, but were in great distress, being evidently unable to find their eggs or young ones, and there can be no doubt that many eggs would become cold and perish, and possibly some young birds also. A friend tells me that he observed the same thing on the Beamsley Moors, where the storm appears to have been even more severe; he watched the Lapwings for some time, and noticed that they, endeavouring to find their eggs, scratched away the snow, but evidently without success.—EDGAR R. WAITE, The Museum, Leeds, May 25th, 1891.

NOTES AND NEWS.

The Collection of Ancient Marbles in the Museum at Leeds forms the subject of an interesting paper by Mr. E. L. Hicks in the 11th volume of the Journal of Hellenic Studies, 1890, pp. 255-270, illustrated by a fine photogravure plate.

The progress made in the re-labelling and re-arrangement of the Leeds Museum is dealt with in the 71st annual report of the Leeds Philosophical and Literary Society, which was presented to the Society at the beginning of May.

The tube-building habits of *Terebella littoralis* are described, and illustrated with a plate, in a paper by Mr. Arnold T. Watson, of Sheffield, in the Journal of the Royal Microscopical Society for 1890, of which a reprint from the author lies before us.

In the Journal of the Linnean Society (Botany—Nos. 187-188, Ap. 25, 1891) we notice a paper by our old friend, Mr. George Massee, F.R.M.S., giving the 'Life-History of a Stipitate Fresh-Water Alga' (*Dictyosphærium ehrenbergianum* Näg.), illustrated by a fine plate.

The Leeds Philosophical and Literary Society are losing the services of Mr. Richard Reynolds, F.I.C., F.C.S., as their senior honorary secretary, after a lengthened period of office. It is satisfactory to note, however, that the Society will still retain (and we hope for long) the benefit of his lengthened experience in his new capacity as a member of the council.

A list of land and fresh-water mollusca of the Liverpool district, prefaced by introductory remarks of a more general character, forms the subject of the Presidential Address which the Rev. H. H. Higgins, M.A., read to the Liverpool Naturalists' Field Club on the 30th January last, and which is printed in full with the 31st Annual Report.

Biographies of living naturalists are not often given. It is therefore interesting to read in the 'Yorkshire County Magazine' for May and June, an account of the life and career of Mr. George Roberts, of Lofthouse, accompanied by a portrait. His ability as a naturalist, and his attainments in more than one department of natural science, are hardly, we think, adequately brought out in the article, which is evidently written from a more purely archæological point of view.

We note in the 31st annual report of the Liverpool Naturalists' Field Club an instance of the attainment of municipal honours by a field naturalist. Mr. John Vicars, to whom, in conjunction with Mr. Robert Brown, the Club has been indebted for notes on the plants collected at its excursions, is described as Mayor of Bootle—an interesting parallel to the Yorkshire case in which so well-known a geological investigator as Mr. James W. Davis at the present time worthily fills the Mayoral chair of so important a borough as Halifax.

'A Simple Method of taking Phenological Observations' is the subject of a paper by Mr. Edward Mawley, F.R.Met.S., who is phenological recorder to the Royal Meteorological Society, and who is desirous of establishing a network of phenological observers throughout the kingdom, to whom he will gladly supply forms and full directions. He may be addressed at Rosebank, Berkhamsted, Herts., by all who may be disposed to take the necessary pains to observe the very few plants and animals mentioned in the schedule.

We have received from the Society for Promoting Christian Knowledge copies of some of their large Natural History Prints, published at a shilling each. They are well adapted for schools, and will serve to convey a sufficiently graphic idea of the animals shown. Those before us include prints of the Camel, Codfish, Herring and Eel, Tortoises, the Colorado Beetle and the Bark Beetle, the Locust and Mole Cricket, the Silkworm and *Pieris brassicæ*. The labelling is not as accurate as we could like to see, and argues the need of more care.

VOLVOX IN YORKSHIRE.

THOMAS HICK, B.A., B.Sc.,

Demonstrator and Assistant Lecturer in Botany, Owens College, Manchester.

In March of last year I drew the attention of the readers of 'The Naturalist' to an important paper on the genus Volvox by Klein, in the hope of inducing Yorkshire botanists and microscopists to assist in extending our knowledge of the Yorkshire species, their distribution, and the physical and other conditions under which they are met with. As the time has come round when the subject may again be profitably worked at, it seems desirable to say a few more words on the subject, with special reference to the results of last year's observations and the desirability of continuing them.

Distribution.—As regards the distribution of Volvox in Yorkshire, little was added last year to our previous knowledge. Mr. Lees, in his 'Flora of West Yorkshire,' gives as its localities Ripon, Bramham Park, and Askern, as well as Bramhope and Hunslet in the Leeds district, and, as was mentioned in my previous paper, I myself collected it several years ago at Rawcliffe and Askham Bog, and in ponds near Wetherby. The new localities which, so far as I have learned, have to be added to this list, are the following: (1) Midgely Moor, near Halifax, where specimens were obtained by Mr. A. Thompson, of Luddenden; (2) a hill slope near Salterhebble, Halifax, where Volvox was discovered by Mr. T. Carnell; and (3) Thornhill Lees, whence specimens were obtained for me by Mr. P. Fox Lee, of Dewsbury.

It is obvious that, even with these additions, the recorded localities for the occurrence of Volvox are extremely few for so large a county as Yorkshire, and one cannot but think that if the ponds in the various districts were thoroughly searched, they might easily be considerably extended.

Vertical Range.—In Klein's paper attention was drawn to the fact that in Germany Volvox inhabited low-lying districts, and had not been found in regions ranging from 900 to 1,300 metres above sea-level. Up to the present time the statement is equally true for Yorkshire, though it is difficult to see why Volvox should not occur on some of our more elevated moorlands. Two of the new localities are interesting from this point of view. The one on the hill above Salterhebble is estimated to be over 600 ft., while that on Midgely Moor is said to be 800 ft. above sea-level. They are the highest points at which Volvox has been found in Yorkshire, so far as I know, and seem of themselves sufficient to warrant the expectation that it

may yet be found at higher elevations. From the numerous facts which have come under my notice indeed, I am inclined to think that elevation has far less to do with the distribution of Volvox than the nature of the pond and its immediate surroundings.

Local Conditions.—The immediate surroundings or the local conditions under which Volvox flourishes are very imperfectly known, and until careful observations have been multiplied and extended, it will be impossible to make any general statements on the subject. Some attention was given to these matters last year, but the observations that were made were very limited. As an example of the details to which they were directed I cannot do better than quote the following extracts from letters sent me by Messrs. Crossland and Carnell, of Halifax, respecting the pond at Salterhebble.

Mr. Crossland writes:—'The altitude of the pond . . . is about 650 ft. above sea-level. It appears to have at some time been excavated on the side of the hill. It is situated a little above the outcrop of the hard-bed coal belonging to the lower coal measures. The hillside faces W.S.W. The pond is fed by a spring. There are three large old thorn trees on the margin—two on the south and one on the east—also *Glyceria fluitans*, *Lotus uliginosus*, and a few other water-loving plants. There is plenty of *Callitriche*, from the washings of which we get *Bulbochæte* and *Coleochæte*, and of Desmids, *Docidium*, *Staurastrum*, *Cosmarium*, and *Closterium*. I don't remember having seen any *Lemna*. Fish were put in a few years ago by the farmer.'

Mr. Carnell writes:—'The pond is not a very large one—say about 30 yds. by 15 yds.—and will be six or eight feet deep. The edges and greater part of the bottom are covered with Starwort, etc., and it contains some small Chub and Perch. There is no perceptible inlet or outlet of water—probably it is supplied by some top spring.'

In addition to the points included in these accounts, a few particulars have been obtained in one or two isolated cases as regards the temperature of the ponds and the depth at which Volvox is found in bright and cloudy weather respectively. The temperature observations I am disposed to regard as of great importance, and as the evidence of its influence on the well-being of Volvox is somewhat conflicting, it is to be hoped that special attention will be paid to it in the future. The accounts of the effect of wind are also wanting in uniformity, the plants being driven, according to some, to the far side of the pond, while according to others they remain on the windward side. These discrepancies may

be due to differences in the amount of shelter afforded by the marginal vegetation on different sides of the pond, and to other influences which co-operate.

SPECIES.—Thanks to Klein's admirable account of the specific distinctions of the forms of Volvox, a brief summary of which was given in my previous paper, it has been found easy to set up a few diagnostic characters by which the species collected may be readily determined, whether the colonies be sexual or asexual. The result is that of the two British species, *V. aureus* appears to be the commoner form in Yorkshire, as I have shown elsewhere to be the case in the district round Manchester. Of my old gatherings in Yorkshire I can only speak with certainty of that made at Rawcliffe in 1878, specimens of which I still have mounted as microscopic slides. This, I can state positively, is *V. aureus*. Most, if not all the rest, I suspect were *V. aureus* also, as I have a distinct recollection of always thinking that the published figures of Volvox—which usually represented *V. globator* (see, for example, the figures in Carpenter's Microscope, 5th Ed., Pl. ix.)—gave a wrong shape to the protoplasts. This, however, does not count for much, and it would be well to determine the forms at Askham and elsewhere—assuming they are still to be found—by direct observation.

Of the three new localities brought to light last year, two undoubtedly yielded *V. aureus*, chiefly, if not entirely, viz., Midgely Moor and Thornhill Lees. But experience has shown that too general a conclusion should not be drawn from a few gatherings, and that it is unsafe to transfer the character of the gathering to the pond whence it was obtained until experience has proved it to be constant. The case of Salterhebble may be cited in illustration of this. The first specimens sent me by Mr. Carnell I received in June, and were found to be the asexual colonies of *V. globator*. Subsequently, in July, specimens were collected by myself, and a much larger supply obtained than could be sent through the post. These, on examination, proved to be *V. aureus*, and no example of *V. globator* was noticed. At first I was inclined to think that a mistake had been made in the determination of the earlier sample, which, though possible was scarcely probable, or that the two species were not really distinct, but capable of passing the one into the other. On comparison with the results obtained elsewhere, however, I came to the conclusion that the explanation is to be found in the fact that sometimes both species co-exist in the same pond, but in widely different proportions, which are liable to vary under circumstances which cannot as yet be defined. In several instances, for example, I have had large gatherings of *V. aureus* in which isolated individuals

of *V. globator* were found, and and vice versa, it is obvious that if under any circumstances local predominance is given to one species at certain points of the pond, the whole must be carefully examined before the character of the pond can be determined. Hence, in practice it has been found necessary to fish round the entire pond in order to obtain sufficient samples for determining the character of the whole. But when all due allowance has been made for this, the general result still appears to be as stated, that *V. aureus* is the commoner form in the localities for which Volvox has hitherto been recorded.

Not much was done last year to determine the seasonal duration of the sexual and asexual colonies, and there are several anomalies which still await elucidation. Thus, in the large supply of *V. aureus* obtained from Salterhebble in July, I found several female colonies with a number of oospores varying up to a maximum of eight, but no males. One can scarcely believe that these were altogether absent, but it is strange that in overhauling some hundreds of individuals, not a single male was met with. In contrast with this, the gatherings at Rawcliffe, in April, 1878, contained large numbers of male colonies, with a smaller but not inconsiderable number of females. It is evident, therefore, from these two illustrations, that on this part of the subject there is still much to be done. It has too often been assumed that the succession of asexual and sexual colonies is simple, definite, and constant, but the researches of Klein have shown that this is not the case, and last year's work has satisfied me that the relation between the various colonies is a complicated one. The facts on which this view is based are chiefly drawn from observations on Lancashire material which cannot be dealt with here, but it is mentioned in the hope that those who are favourably situated for the purpose will assist in throwing more light on the subject. If the succession of forms met with in one and the same pond, with the dates of their occurrence, could be once determined, an important step would be taken towards unravelling the complicated relations under consideration, and would afford a standard of reference for other localities. For this purpose it would be necessary to take samples regularly and periodically, and to examine them with sufficient thoroughness to ensure an accurate estimate of the character of the whole. In other respects, the work would not be difficult, seeing that the species are easily distinguishable, and the sexual structures so well differentiated that they may be recognised under the microscope at a glance. It is hardly necessary to say that in cases of doubt, or exceptional difficulty, it would be a pleasure to me to give any assistance in my power.

THE YORKSHIRE NATURALISTS' UNION AT MALHAM AND GORDALE.

It is a well-known custom connected with the meetings of the British Association that excursions should be undertaken during two days of the meeting. These are arranged with a view to giving the visitors an opportunity of acquainting themselves with whatever there may be of interest in the neighbourhood of the place of meeting. In a county like Yorkshire, noted as it is for the diversified character of its natural features, for its mountains and moorlands, abbeys and castles, its agriculture and commerce, the difficulty is not so much to find places which are likely to attract visitors, as to select, from the many which suggest themselves, those which can be easily compassed in a day's excursion.

Among the numerous excursions that were carried out on Thursday, the 11th of September (1890), was one which was entrusted to the guidance and direction of the Yorkshire Naturalists' Union. The area allotted to this expedition was the plateau of Malham, and the escarpment which it forms along the South Craven fault. This district includes the only lake in the West Riding, and the remarkably picturesque scenes of Malham Cove and Gordale Scar. Besides these natural beauties there is not a branch of natural history which cannot be successfully pursued in this district, owing chiefly to the diversified character of the geological formations, which include Silurian, Mountain Limestone, Yoredale Shales, and Millstone Grit. These characteristics are especially valuable when it is remembered that this was an essentially working excursion, carried out (so far as the restrictions of the British Association Committee would allow) on the lines of the ordinary excursions of the Union: and the fact that it was a working excursion attracted many members of Field Naturalists' Clubs, who were anxious to avail themselves of the opportunity of studying the methods adopted by the Union.

A special train left Leeds at 8.25 a.m. with a party of about seventy, and arrived at Bell Busk at 9.15 a.m. Here wagonettes were in waiting to convey the party to Malham. A break in the journey was made at Kirkby Malham to give the excursionists an opportunity of examining the interesting old church, and of inspecting the register, which contains the signature of Oliver Cromwell. The Rev. T. C. Henley most kindly explained the objects of interest. On arriving at Malham village, lunch was served at 10.30, at the Buck Hotel, after which three parties were formed for investigating the natural history of the district.

The geologists, who attracted the largest number of followers, were under the leadership of Mr. R. H. Tiddeman, M.A., F.G.S., and Mr. James W. Davis, F.S.A., F.G.S. The party made for Gordale Scar, with its lofty overhanging cliffs and picturesque waterfalls; this precipitous scar was safely ascended by the party, who next crossed the moors to the limestone pavement at Malham Cove, and descended the mountain side to the foot of the rocky escarpment whence the water emerges.

Another party, chiefly botanists, led by Mr. C. P. Hobkirk, F.L.S., proceeded by the river bank to Malham Cove, and ascended by easy stages to the limestone pavement. The party then struck over the moors until the highway was reached, and a pleasant walk brought them to Janet's Cave, with its pretty waterfalls, and thence to Gordale Scar.

The third party, which had for its leaders Mr. Wm. Denison Roebuck, F.L.S., and Mr. Edgar R. Waite, F.L.S., had a more ambitious programme before it, and was composed of members of the vertebrate section and conchologists, but had the advantage of skilled botanical assistance, in the presence of Mr. George Massee, F.R.M.S. These members proceeded with the geologists as far as Gordale Scar, and there struck out for themselves over the moors to Malham Tarn. Some of the members availed themselves of the boats on the Tarn, which had been kindly placed at their disposal by Mr. Walter Morrison. The 'Sinks' was next visited, and the return journey was made by way of Malham Cove.

The re-united party sat down to tea at 4 p.m., at the Buck Hotel, Malham, and as time was exceedingly limited, it was deemed advisable not to hold the usual sectional and general meetings. After tea, the party assembled in front of the hotel, under the presidency of Mr. C. P. Hobkirk, F.L.S., for the purpose of passing a series of votes of thanks to those who had contributed to the success of the excursion. Mr. James W. Davis, F.L.S., F.G.S., was entrusted with the duty of moving that the thanks of the assembly be conveyed to Mr. Walter Morrison, M.P., of Malham, for allowing them the privilege of travelling over his estates and for kindly placing his boats at their disposal; also to the Rev. T. C. Henley, vicar of Kirkby Malham, for conducting them over the church and pointing out the various objects of interest in that ancient edifice. Mr. Davis remarked that Mr. Morrison was always ready and willing to assist scientists in the investigation of the district, and at his own cost had had experiments made with the object of ascertaining the course of the stream which entered the

ground at 'The Sinks,' and was found to make its appearance at Aire Head. In seconding the resolution, the Rev. E. P. Knubley, M.A., one of the Hon. Secretaries of the Yorkshire Naturalists' Union, said that they had the good fortune of having in the county landowners who had always shown themselves willing to assist the Union in its investigations. The motion was carried, and responded to on behalf of Mr. Morrison and himself by the Rev. T. C. Henley. On the proposition of Dr. Valentine Ball, F.R.S., of Dublin, seconded by Mr. Jas. Thompson of Glasgow, a vote of thanks was accorded to the various members of the Union who had acted as leaders of parties. Dr. Ball took occasion to remark that he had been very much struck with the admirable way in which the members of the British Association had been received, and remarked that its Leeds meeting had not only been a most successful, but a most agreeable one.

Shortly after six o'clock the excursionists proceeded by conveyances to Bell Busk, where they arrived in time for the special train which was to convey them to Leeds.

The following reports have been prepared by the several officers in charge of their respective sections :—

For the Vertebrate section, Mr. Edgar R. Waite, F.L.S., writes:—The excursion being restricted to members and associates of the British Association, the number of Y.N.U. members attending the section was consequently small, but all the officers were on the field, viz., the President, Mr. Thos. Bunker, Goole, and the Hon. Secretaries, Messrs. James Backhouse, F.Z.S., Harrogate, and Edgar R. Waite, F.L.S., Leeds. One or two representatives of the section rode with the general party from Bell Busk to Malham, but the majority elected to traverse the six miles afoot, leaving the dusty high road for the fields where practicable. A Goldfinch was seen on the road between Bell Busk and Airton, and flocks of Chaffinches, Greenfinches, Sparrows, and Yellow Buntings rose from the cornfields as the party passed by. The end of summer is a season not conducive to obtaining a long list of birds, for most of the warblers and many other migrants have left the uplands and are going down the valleys preparatory to their annual migration ; the only summer visitors seen on the excursion were the Ring Ouzel, Swallow, Martin, and Sand Martin. It is also too early for the winter visitors, so that the bulk of the birds recorded are residents. On arriving at Malham several nests of the House Martin were seen under the eaves of the 'Buck,' containing young birds, which were being fed by their parents heedless of the presence of the bystanders. From here the party proceeded up Gordale Beck, where several Dippers and one or two Water Voles were met with. Arrived at Gordale Scar a Kestrel

was noticed, and on the moor-top the Weasel and Stoat were added to the list. The way was then taken for Malham Tarn, and in passing through the wood flocks of Goldcrests, in company with Coal and Blue Tits, were observed. Mr. Morrison having kindly placed his boats at the disposal of the Union, the party, in company with the Conchological section, were soon afloat. A flock of about thirty Mallard rose from the water, and after circling about for some little time settled on the further side of the Tarn. Here the only winter visitor was noted—a female Wigeon, which paddled quietly away. This is a somewhat early occurrence, as the bird does not usually arrive on our shores until the end of September. On reaching the lower end of the Tarn the Mallard were again disturbed, and shortly afterwards a couple of Little Grebes, which were seen swimming, dived on the approach of the boat. After disembarking, the party followed the stream to the 'Sinks' and made their way to Malham Cove, where other Weasels were observed, and after descending, the stream was again followed to Malham, several Kingfishers being seen en route. It would appear that the waters from the Tarn become cooled in their passage through the earth, for Mr. Knubley took the temperature of the waters with the following result:—Gordale Beck 57°, Aire 46·5°, the temperature of the atmosphere in both cases being about 68°. The following is a complete list of the Vertebrates observed on the excursion :—

Mammals.

Weasel.
Stoat.
Rabbit.
Water Vole.

Birds.

Missel Thrush.
Song Thrush.
Blackbird.
Ring Ouzel.
Redbreast.
Goldcrest.
Hedge Accentor.
Dipper.
Coal Tit.
Blue Tit.
Wren.
Pied Wagtail.
Grey Wagtail.
Meadow Pipit.
Swallow.
Martin.
Sand Martin.
Goldfinch.
Greenfinch.
Sparrow.
Chaffinch.
Yellow Bunting.
Starling.
Jackdaw.
Carrion Crow.
Rook.
Kingfisher.
Kestrel.
Mallard.
Wigeon.
Ring Dove.
Red Grouse.
Lapwing.
Snipe.
Little Grebe.

Fish.

Trout.
Bullhead (*Cottus gobio*).

In the absence of its officers, the Conchological section was represented by Mr. W. Denison Roebuck, F.L.S., Mr. A. H. Newstead, B.A., of Epping, and Messrs. C. Rowson and F. W. Fierke of Hull, by the last-named of whom the following report was drawn up.

Although the weather was fine there was too much wind to attract the Helices from their retirement, such species as *Helix ericetorum* and *H. lapicida* being either rarely, or not at all, observed. A careful search was therefore required of the members of this section to enable them to obtain anything like a list, which, as the time was rather short, and the ground to be covered somewhat extensive, proved no easy task.

For a day excursion at Malham the meagre attendance was not at all satisfactory, but had it been possible to divide the workers into parties, some to undertake the Tarn, others the grand limestone rocks of the moors, better results might reasonably have been anticipated from the labours of this section.

The following is the list of Mollusca collected during the day :—

Arion bourguignati. One taken at Malham.

Succinea putris. Under a tree trunk on the border of Malham Tarn at 1,200 ft. alt.

Vitrina pellucida. Rather common, both at Bell Busk on the roadside, and near Malham Tarn House, 1,300 ft. alt.

Zonites cellarius. Malham.

Zonites alliarius. Common at Bell Busk.

Zonites nitidulus. On the road to Malham from Bell Busk.

Zonites crystallinus. Above Malham Cove, and close to Malham Tarn House.

Helix nemoralis. Dead specimen was found of *libellula* ooooo at Bell Busk.

Helix rufescens. A somewhat common species at Malham.

Helix hispida was found at Bell Busk.

Helix sericea. On the road from Malham to the plateau, on a heap of limestone rocks some 100 yards past the village, which were covered over with nettle.

Helix ericetorum. On the same road, but a little higher up.

Helix rotundata. Bell Busk and Malham.

Helix rupestris. Common on walls near Bell Busk ; also on the same heap of limestone rocks as *H. sericea*, behind Malham, but occupying much drier situations than that species and away from the herbage.

Helix pulchella. Malham.

Pupa umbilicata. Close to Malham Tarn House, and also at Malham and the valleys above Malham Cove.

Clausilia rugosa. Very common at Bell Busk.

Clausilia dubia var. **suttoni.** Limestone rocks on Malham Plateau.

Zua lubrica. Bell Busk.

Sphærium corneum. Dead specimens in the Tarn, common.

Pisidium pusillum. Common in Malham Tarn.

Bythinia tentaculata. Only dead specimens taken in the Tarn.

Valvata piscinalis. A very prolific species in the Tarn.

Planorbis nautileus. Several specimens were taken in the Tarn.

Planorbis albus. Malham Tarn.

Planorbis contortus. Malham Tarn.

Physa fontinalis. One specimen in the Tarn (W.D.R.).

Limnæa peregra. The majority found in the Tarn were dead specimens.

Limnæa stagnalis. Only dead specimens were found in the Tarn, but were to be picked up abundantly on the bottom, and were as large and fine as in many lowland stations, although Malham Tarn is on an exposed open plateau with an elevation of 1,250 feet.

Ancylus fluviatilis. Malham Cove.

On comparing the terrestrial species noticed at this excursion with the published list of mollusca for Malham, there appear to be two additions, viz., *Z. nitidulus* and *H. pulchella*, while the distribution of *H. sericea* has been extended.

As regards the aquatic species, two boats were placed at the disposal of the party on the Tarn, but although four scoops were set to work, the results did not appear very encouraging. On previous occasions *Potamogeton lucens* had produced numerous *Limnæa stagnalis*, but this time the collectors met with no such good luck. Only odd live specimens of *Sphærium*, *Limnæa peregra*, and *Physa fontinalis* were secured, whilst *Valvata piscinalis* was very plentiful. The other species obtained consisted altogether of dead specimens scooped from a sandy bottom, largely made up of the fragments of shells and other débris. It is satisfactory, however, to note that *Physa fontinalis* and *Planorbis albus* which appear on the list had not been previously recorded.

For the Entomological section, Mr. G. T. Porritt, F.L.S., of Huddersfield, reported that the only Lepidoptera which had been

reported were *Cidaria immanata* (common) and *Sciaphila pascuana*, and that the Neuroptera and Trichoptera included the following:—*Leuctra fusciventris*, *Nemoura meyeri* (abundant), *Stenophylax concentricus*, *Halesus auricollis* (common), and *Agapetus fuscipes*; and in Coleoptera the Rev. E. P. Knubley took an example of *Necrophorus ruspator*, a common 'Burying-beetle.' In other orders no observations seem to have been reported, except that *Gammarus pulex* occurred in Mr. Knubley's gatherings of water at Malham Cove and Gordale Scar.

In Micro-Zoology and Micro-Botany, the Rev. E. P. Knubley, M.A., collected a few gatherings, which were submitted to and reported on by Mr. J. M. Kirk, F.R.M.S., of Doncaster. All were at an altitude above sea-level of 700 feet. The first gathering, from clear water at Malham Cove, at a temperature of 46½°, contained—of Diatoms, *Amphora ovalis*, *Meridion circulare*, *Cocconema lanceolatum*, *Odontidium turgidulum*, *Synedra capitata*, and *Pinnularia oblonga*; of Desmids, *Euastrum didelta*, *Penium margaritaceum*, and *Docidium truncatum*. Mr. Kirk remarked that the list of diatoms in this gathering was interesting, and that there was another species about which he could not be certain. The second gathering, also at Malham Cove, at the same temperature, contained crowds of *Meridion circulare*, also *Pinnularia oblonga* and *Nitzschia sigmoidea*, and a Rotifer, *Furcularia reinhardtii*. The third gathering, from Gordale Scar, at a temperature of 57°, included—of Diatoms, *Fragilaria capucina*, *Synedra radians*, and *Denticula obtusa*. Mr. Kirk noted that there was an almost total absence of animal life, owing to the length of time which would elapse before the tubes could reach him for examination.

For the Botanical Section, Mr. W. Norwood Cheesman, of Selby, reported that the more noteworthy plants seen were the following:—

Thalictrum montanum.
Actæa spicata.
Meconopsis cambrica.
Viola lutea.
Hypericum montanum.
Cochlearia anglica.
Geranium sanguineum.
Geranium sylvaticum.
Geranium pratense.
Geranium lucidum.
Geum intermedium.
Rosa tomentosa.
Poterium sanguisorba.
Rubus saxatilis.
Saxifraga hypnoides.
Sedum Telephium.
Saxifraga tridactylites.
Chrysosplenium alternifolium.
Parnassia palustris.
Myrrhis odorata.
Lactuca muralis.
Carduus acaulis.
Carduus heterophyllus.
Campanula latifolia.
Antennaria dioica.
Cuscuta europæa. On nettles, road to Malham.
Lathræa squamaria. Near Janet's **Cave.**
Salvia Verbenaca.

Stachys Betonica.
Pinguicula vulgaris.
Potamogeton densus.
Potamogeton lucens.
Polypodium vulgare.
Polypodium calcareum.
Cystopteris fragilis.
Polystichum aculeatum.
Lastræa Oreopteris.
Asplenium viride.
Asplenium Trichomane.
Asplenium ruta-muraria.
Scolopendrium vulgare.
Lycopodium selago.
Selaginella selaginoides.

For the Geological Section no report has been furnished, but it may be explained that the work of this section was confined to explaining, for the benefit of visitors, the already well-known geological features of the district.—E.P.K., E.R.W.

NOTES—MAMMALIA.

Parish Accounts, Rigsby with Ailby, North Lincolnshire.—The parish accounts of Rigsby with Ailby contain many entries of sums paid for killing foxes (*Vulpes vulgaris*) between 1686 and 1739. [We should have been glad to have the full details with dates.—Eds. Nat.] Besides these, there are the following items extracted by me :—

			s.	d.
Meles taxus Schreb.—	1686.	'It. giuen for a badger taking ...	1	0'
	1718.	'gaue for a bager killing		6'
	1732.	'payd for fox Bagear	1	0'
	1733.	'for a Baggar killing		6'
	1735.	'Giue for Bager caching		3'
Lutra vulgaris Erxl.—	1710.	'paid for a noter killing		6'
	1725.	'Giuen to Samwell Dusnap for killing a oter		3'
	1733.	'Giue to Richard Norton for a noter killing		6.'

—J. Eardley Mason, Alford, Lincs., May 4th, 1891.

Carnivorous propensities in the Water Rat.—A sudden rustling in the grass, a splash, and then a brown apparition gliding through the water close to the bank-side is what we generally see of one of our commonest British mammals: it is comparatively seldom that several are seen together as in the case about to be described. These little animals are usually understood to feed upon the roots of aquatic plants, but the following incident seems to point to an occasional carnivorous propensity, and as it has been given to me by one of the spectators, who is intimately acquainted with the Water Rat and his ways, I give it simply as a curious yet significant fact. One Sunday afternoon in July last, Mr. Poulter of Church Fenton, and his brother, whilst walking across some low land south of the village, heard some piteous screams proceeding from a small bridge of railway sleepers spanning a little drain grip. Through a rent in one of the sleepers, Mr. Poulter saw a young rabbit struggling violently, and suspecting a stoat or weasel to be in close attendance behind, he raised the sleeper to release the rabbit. Immediately this was done, out came, one by one, five Water Rats! which speedily vanished into a drain end, under the adjoining field. When lifted out, the rabbit had just succumbed—obviously killed by the Water Rats. Whether a meal would have been made of it, had not an interruption come, is of course an open question, but the reason for the murder must certainly have been a pretty strong one, for the rabbit, though young, was a large one—quite large enough at least for Mr. Poulter to take home for domestic purposes.—J. Backhouse.

[Mr. Backhouse assures us that Mr. Poulter is so well acquainted with the distinction between *Arvicola amphibia* and *Mus decumanus*, which also is a common species in drains and on the banks of streams, that we may safely accept the above note as an instance of a remarkable deviation from the normal habits of the Water Vole.—Eds.].

STALAGMITES OF SAND.

T. MELLARD READE, C.E., F.G.S.,
Park Corner, Blundellsands, near Liverpool.

THE mode in which stalagmites in limestone caves are built up by accretion of carbonate of lime from water constantly dropping on the same spots is familiar to most people. It was rather an interesting surprise to me to find that stalagmites of sand under certain conditions are a possibility. This phenomenon I observed some years ago on the shore at Hightown, and noted it for future use.

A bed of peat situated on the upper part of the shore beyond the reach of all but spring tides had a projecting edge overhanging the sand of the shore below, which was then in a dry state. Over the surface of the peat on which a small quantity of sand was scattered a little water trickled, and fell over the edge at several points in distinct drops. The vertical fall was not more than six or eight inches. Under each drop a little pillar of sand was being built up, and there were others standing where the water had ceased to drop. Some of them were several inches high. On examination I found that each drop of water took with it a few grains of sand, the accumulation of which gradually built up a pillar. The first drop of water produced a cup-like depression in the surface of the shore, but gradually a pillar became erected which still preserved the cup-like depression on the top. The phenomenon was contrary to ordinary experience, which would have suggested that a pillar of sand cemented only with water was an impossibility.

The 'stalagmites' assumed different forms, some having a circular stem, smallest at the base, with a spreading cup or corolla at the top. Others simulated a stem of coral, while those that had been built up beyond the strength of their foundations became pyramids of ropy matter. It was singular to see with every drop a glistening pulsation travel through the sand pillar.

My son, M. Treleaven Reade, has succeeded in manufacturing 'sand-stalagmites' in the following way. He took a circular tin vessel and drilled a hole nearly through, finishing it by puncturing with a needle. Then, filling it with finely sifted sand, he placed it over a larger vessel filled with dry sand. On adding water sufficient to liquefy the sand and make a drip through the hole, each drop took with it a grain or two of sand, gradually building up a sand-pillar before the eye. The phenomenon is evidently due to capillarity. The dry foundation of sand sucks the superfluous water from the sand-column as each drop falls, leaving only the capillary water

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which binds the grains of the 'stalagmite' together for the time being. It is this quick drainage that produces the appearance of pulsation. With each drop the water suffuses the substance of the column and disappears in the interval before the next drop falls.

So soon as the sand in the vessel below becomes saturated, that is when its capillarity is satisfied, the stalagmite gets supersaturated and falls to pieces.

I fancy it is not known to many that diverse geological phenomena can be imitated with sand and water, and in fact are so imitated in Nature, but pass unobserved or unheeded. The cementing power of pure water by reason of its surface tension is very considerable, so much so that moist sand will stand when excavated with a considerable vertical face. I have before pointed out several geological phenomena that may be studied in pure siliceous sand, and now make this little addition to the information on the subject.*

It may be appropriate here to record a kindred phenomenon I have lately observed on the shore at Blundellsands. The cavalry from the Seaforth Barracks often come out for exercise and gallop along the shore on or about the margin of spring-tides, leaving innumerable footprints of horses' hoofs on the sand, if damp. The sand, blowing across these depressions, builds out the sand over the hollows, so that they appear as crescentic cracks in the shore, in some cases nearly closed up. On examination I find that the sand does not fill up the depression, but simply 'corbels' over the hollows, the greatest 'corbeling' taking place on the windward side. I consider this very remarkable, and would have deemed it impossible had there not been such irrefragable proofs. The explanation appears to be that some of the sand-grains are arrested while blowing horizontally over the 'hoof' depressions, and by slow accretion build out from the side the 'overhang' or 'corbelling,' the moisture from the surrounding sand providing the binding by capillarity. The greater part of the sand is doubtless blown across the depression without falling in.

Observations such as these may seem trivial to some minds. On the contrary, they are interesting from a physical point of view, and valuable as often affording explanations of geological phenomena of a very puzzling nature.

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* 'Geological Lessons among the Sand-hills,' Science Gossip, 1881, p. 198.
'Miniature Domes in Sand,' Geol. Mag., Jan. 1884.
'Eolites,' Ibid, 1875, p. 587.
'A Mechanical Cause of the Lamination of Sandstone not hitherto noticed.' Nature, vol. xxxvii, pp. 222, 223.

OCCURRENCES OF UNCOMMON BIRDS IN DERBYSHIRE AND SOUTH YORKSHIRE.

ELIJAH HOWARTH, F.R.A.S.,

Curator of the Public Museum, Weston Park, Sheffield; and late President of the Sheffield Naturalists' Club.

Lomvia troile. Common Guillemot. A specimen was captured alive in Sheffield on Nov. 26th, 1890, and taken to the Public Museum, where it lived for four days. The bird was plump and in good winter plumage, but had received some injury to its legs. It was found in the neighbourhood of the dams near to the Museum, but not on the water. The appearance of this bird so far inland at the winter season, when its usual haunts are far out at sea, is very remarkable, and I know of no previous record of its occurrence in this neighbourhood. Westerly gales had prevailed a few days before, and the weather was just changing to the severe cold which commenced here on Nov. 26th.

Fulica atra. Coot. One was caught alive on the River Don at Sheffield, on Nov. 29th, and lived in confinement for rather more than a week. This is not a common bird here, and it is quite unusual for it to be found in the midst of the manufacturing part of the town as this bird was.

Syrnium aluco. Tawny Owl. We also have in the Museum a living Tawny Owl, which was caught near Grantham, Lincolnshire, in April last.

Mr. A. S. Hutchinson of Derby, the official taxidermist to this Museum, has sent me the following notes of rare birds and unusual varieties, which have been sent to him in the flesh during the latter part of 1890:—

Tringa striata. Purple Sandpiper. Adult female from near Derby.

Saxicola œnanthe. Wheatear. Pale buff-coloured variety shot at Castle Donington, September 1890.

Perdix cinerea. Partridge. Immature, pied and mottled with white all over, shot near Burton-on-Trent. (This bird is the property of Sir Francis Burdett of Foremak Hall, on whose estate it was shot.)

Passer domesticus. Sparrow. Albino, shot at Arleyston near Derby, August 1890.

Turdus merula. Blackbird. Pied variety, almost white, shot at Arleyston, Nov. 1890.

Turdus musicus. Thrush. White variety, with dark eyes, shot at Sudbury, near Derby, June 1890.

Phasianus colchicus. Pheasant. White variety, with pale blue eyes, shot near Ashby-de-la-Zouch, Dec. 1890. This record looks as if coming events had cast their shadows before, and the birds had prepared themselves for the severe winter with its long-continued white mantle.

Dafila acuta. Pintail Duck. Shot on the lake in Kedleston Park, near Derby, Dec. 23rd, 1890. The property of the Hon. A. N. Curzon.

Fuligula cristata. Tufted Duck. Male shot on the Trent at Weston, Dec. 1890.

Fuligula marila. Scaup. Female shot on the Trent at Weston, Dec. 1890.

Mareca penelope. Wigeon. Male shot near Doncaster, Dec. 1890.

Fuligula ferina. Pochard. Do. do.

These two are the property of Mr. A. Gamble, Sheffield.

Tadorna cornuta. Sheldrake. Shot on the Trent near Burton, December 1890.

NOTE—GEOLOGY.

Boulders at Guisborough.—I have just observed on page 347 of 'The Naturalist' for Nov. 1888, a mention by Mr. Gregson of boulders in the Priory grounds at Guisborough. This reminds me of rather a curious circumstance. In 1878 Admiral Chaloner excavated the floor of the church, and the workmen uncovered a large boulder actually resting upon the stone pavement. How in the world did it get there?

It is also perhaps worth record that when a deep excavation was made under Guisborough Beck, for laying a pipe, a peat-like deposit was found immediately under the stream, containing bones of the horse in numbers.—W. C. Hey, York, March 9th, 1891.

NOTES—ORNITHOLOGY.

Spotted Crake at North Stainley, near Ripon. -During the last week a Spotted Crake (*Porzana maruetta*) has frequented a stream which runs by my garden, and has often shown itself among the shrubs and on the lawn. The stream is not more than ten yards from the house.—R. A. Summerfield, North Stainley Vicarage, April 30th, 1891.

Flamborough Bird Notes.—Since I last wrote you, we have had an immense quantity of migratory birds. April 16th, some three or four Swallows (*Hirundo rustica*) seen. April 18th, a pair of Turtle Doves (*Turtur communis*). April 19th, Cuckoo (*Cuculus canorus*) heard for the first time this season. April 20th, several Whitethroats, Great and Lesser (*Sylvia cinerea* and *S. curruca*). May 4th, a pair of Hooded Crows (*Corvus cornix*) and one Woodcock (*Scolopax rusticola*) seen on the Headland. May 10th and 11th, a great rush of Redstarts (*Ruticilla phœnicurus*), Blackstarts (*R. tithys*), Wheatears (*Saxicola œnanthe*), Pied Flycatchers (*Muscicapa atricapilla*), a few Gold-crested Wrens (*Regulus cristatus*), and Stonechats (*Pratincola rubicola*). The hundreds of Redstarts and Blackstarts which have arrived on the Headland are something astonishing; I have not seen so many for years.—Matthew Bailey, Flamborough, May 14th.

THE PIED AND WHITE WAGTAILS IN NOTTS.

F. B. WHITLOCK,
Beeston, Notts.

READERS of 'The Naturalist' who also see the 'The Zoologist,' will remember a recent paper by Mr. O. V. Aplin on the Grey and White Wagtails in Oxfordshire.

In his interesting paper, Mr. Aplin records the interbreeding of the Pied and White Wagtails (*Motacilla yarrelli* and *M. alba*) as observed by him in Oxfordshire in June last. As I had reasons to suspect a similar case having occurred in this neighbourhood, I resolved to keep a sharp look-out for the White Wagtail in the coming season of 1891. Certain remarks of Mr. Aplin's, relating to the amount of grey and black to be found in the breeding plumage of the female Pied Wagtail, determined me also to examine all individuals of that species which should happen to come under my notice.

In previous years I have paid most attention to the various small waders which visit the Trent valley on their migrations, rather to the neglect of the Wagtails, which are so numerously represented; and though I have long suspected the White Wagtail to be a regular visitor in small numbers, it was not until April last year that I fully identified it.

In the present year but few migrants had arrived by the middle of April, the weather being unfavourable. The 18th April, however, was warm, with light S. to S.W. winds, and in the evening I saw the first Swallow (*Hirundo rustica*). Knowing there would be an arrival of Yellow and Pied Wagtails, I was early abroad the following morning. Arriving at the river, I found my surmises were correct, a many *M. rayii* and *M. yarrellii* appearing on the margins of the stream. Taking my boat, I rowed up the stream, examining such birds as attracted my attention, with the aid of my glass. It was not until I had rowed about three miles that my patience was rewarded. I was watching a Common Sandpiper (*Tringoïdes hypoleucos*) feeding on a sand-bank on the opposite side of the Trent, when several very light-coloured Wagtails caught my eye, and though they were sixty yards off, I had little doubt that I had met with a little flock of White Wagtails. After watching them through my glass for some time, I rowed my boat over to the other side of the river to get a better view, and though I found them rather wary, I was able to identify them with certainty. Their notes were different from those of the Pied Wagtail, and I fully agree with the authors of the 'Birds of Cumberland,' who write:—'It has always seemed to us that the call-note of the White Wagtail was softer and less incisive than that

of the Pied Wagtail.' I also think, if anything, they are more lively in their movements and rather shyer. A Pied Wagtail takes but little notice of a small boat passing within a few feet; the White Wagtail will not permit this. I found my flock to consist of five, apparently of both sexes. A little later in the month, I was led by the difference in their notes to identify two more.

It may be interesting to those who are not familiar with the White Wagtail to enter into some of the differences of plumage between it and the Pied Wagtail. There can be no difficulty in distinguishing the males in breeding plumage, the glossy black head and mantle of the Pied Wagtail being in strong contrast to the dull black head and clear pearl-grey mantle of the White Wagtail.

Females in breeding plumage of both species seem to be subject to some variation, but there is one constant difference, and this applies also to birds of the year and adults in winter plumage, as pointed out by Mr. Aplin. In *M. yarrellii* the upper tail coverts are black; in *M. alba* they are dull lead grey, no black being met with until the tail is reached.

The female of *M. yarrellii* in breeding plumage has the general colour of the upper parts dark grey, boldly mottled with black, the head having more black than grey, and the grey being of a rather muddy tinge. In the White Wagtail the mantle is clear pearl grey, the head having a darker appearance, owing to a few streaks of black on either side of the crown, of greater or lesser intensity in different individuals.* But there is another variety of the female *M. yarrellii* not alluded to by Mr. Aplin, and which I have met with several times, the mantle in this case being pure grey, though darker than in the case of *M. alba*, and, curiously enough, the head and nape are dull black, with hardly any grey mottling at all. It was the knowledge of this variety that made me hesitate in recording the supposed interbreeding of the two species in Notts. An interesting fact in connection with this case is that the eggs produced were of very small size, and much resembled the variety of eggs of *M. alba* figured by Mr. Seebohm. In the Oxfordshire case the evidence is much strengthened by the female having a grey head, a characteristic I never observed in *M. yarrellii*.

I feel sure that I have read somewhere that old females of *M. yarrellii* become very grey. I think, on the contrary, that young females are grey, and also of a smaller size, the difference in the length of the wings and tail of these grey specimens compared with dark ones being very apparent.

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* Females of *M. alba* often have a few white feathers on the chin and throat. I have a female *M. yarrellii* marked in a similar manner.

I think that Pied Wagtails which spend the winter with us are darker in plumage than immigrants arriving in spring. A female I have, which haunted a bend in our river throughout the recent severe weather, has the ear coverts nearly black; the flank feathers are also much darker.

In the foregoing notes I do not pretend to have entered into the smaller and, to my thinking, not very constant differences between the two species as pointed out by various authors. Anyone who has had much experience in skinning birds will know how readily the relative extent of markings may be altered by careless making up. Such differences, to be of any value, must be noted on the spot from freshly-killed birds.

It is yet too early to say whether the White Wagtails will breed here, but if such be the case, I hope to send some further notes on the subject.

In Memoriam.

JOHN HARRISON.

By the lamented death of Mr. John Harrison, Yorkshire natural history has suffered a severe loss, and many of her naturalists an old, much esteemed, and greatly respected friend.

Mr. Harrison was born at Nunnington Hall, near Malton, on the 1st of June, 1823, and spent his boyhood there, afterwards residing at Murton, near Hawnby, until 1852, when he removed to Wilstrop Hall, near York, where he passed away on the 30th of April last, falling a victim to bronchitis, following an attack of the prevalent influenza.

From his youth until his death he was a true lover of nature, and a close and careful observer of her children and their ways. His profession—a gentleman farmer—afforded him unlimited opportunities of pursuing his favourite study, and the result was that he possessed a surprising amount of knowledge in many departments of natural history. This knowledge, though seldom contributed by him to scientific literature, owing to Mr. Harrison's modest nature, was always freely at the disposal of those who sought it. The authors of the 'Vertebrate Fauna of Yorkshire' well remember how generously he afforded them much valued aid during the progress of their work.

Mr. Harrison's special study was ornithology. In this branch of science he was not only familiar with the British aspect of the subject, but his special trips to Scandinavia, Holland, the Lower Danube, and North America, undertaken for the purpose of making

himself familiar with some of the rarer species, contributed a practical aspect to his general knowledge of the European and Nearctic avifaunas. The writer will ever remember with unalloyed pleasure the advantages of Mr. Harrison's genial companionship on many occasions, and especially on their expeditions to North Brabant and to Hungary and Sclavonia.

In 1867 Mr. Harrison shot the first British specimen of the Lesser Kestrel (*Tinnunculus cenchris*), and, although himself a collector of birds, he, with his natural generosity, presented the specimen to the York Museum, in order that all who desired might have the benefit of examining it. He also formed a very valuable collection of birds' eggs. Mr. Harrison filled the office of President of the York Naturalists' Field Club, and contributed materially for many years to the value and interest of the meetings of that Society.

Wilstrop Hall and its surroundings were a paradise for birds, and many naturalists have visited Mr. Harrison's home on the site of the battlefield of Marston Moor. Here there was much of interest to be seen, since all birds found in Mr. Harrison a staunch protector. When carrying out the extensive alterations which Mr. Harrison effected on the farm premises, he caused holes to be left in the walls and gables for nesting-sites for Starlings, Titmice, and other birds, while boxes, specially constructed, were erected in the barns for Owls. Hawks were permitted to dwell in peace in the woods and plantations, and yet, in spite of the presence of these supposed deadly foes, Mr. Harrison was able to afford his friends an excellent day's pheasant shooting.

Mr. Harrison was at one time an enthusiastic collector of butterflies, and he used to relate how on one occasion he was driving to Wetherby Market in a neighbour's conveyance, when he espied a butterfly on the wing. 'Stop! pull up,' he cried, and was out of the conveyance almost before his friend was aware of it, and to his utter astonishment, in full pursuit. At this time other conveyances were seen approaching, and the non-naturalist called upon Mr. Harrison to give up the chase and get into the trap at once, before these people overtook them; 'For,' said he, 'they will think we have lost our senses.' In reply, Mr. Harrison remarked, 'Why, it was a Clouded Yellow!'

Of Mr. Harrison's kindly nature, genial disposition, and sterling worth, it is quite impossible to speak in terms too high. He had, and most deservedly, a host of friends by whom his loss will be most keenly felt, but his memory will be treasured always by them, and by all those who had the advantage of his acquaintance.—W.E.C.

THE FISH-FAUNA OF NORTHUMBERLAND AND DURHAM.

Mr. Richard Howse, the well-known and able Curator of the Museum at Newcastle-on-Tyne, has published in the Natural History Transactions of Northumberland and Durham, a 'Catalogue of the Fishes of the Rivers and Coast of Northumberland and Durham and the adjacent Sea,' of which a reprint lies before us.

There can be no hesitation in declaring this to be one of the best pieces of natural history work that has been produced of late years, and the author, who has spared no pains to render it as complete, as useful, and as interesting as possible, is to be congratulated upon the result of his labour with no stinted praise.

The authorities in charge of the Newcastle Museum are also to be heartily congratulated upon their exceptional appreciation of what is, perhaps, the most important function of a provincial museum, and the considerable number of species of fish that the present Catalogue evidences to be represented in the Museum by local specimens bears witness to the enlightened policy which characterizes their administration of it. So also does the list of desiderata in this respect, which Mr. Howse appends to his paper, further show how fully alive they are to their responsibilities, and we hope that the time which is to elapse before each species in desideratum is added to the collection may be of the briefest.

The introduction to Mr. Howse's Catalogue first deals with the bibliography of the subject, enumerating not merely the lists, but also the additions to them which have been from time to time published, and in the list itself the records are faithfully repeated for each species. Cognizance is also taken of the Firth of Forth and Yorkshire lists, and useful comparisons are instituted. The introduction next deals with the systematic classification adopted, which is that of Dr. Günther's British Museum Catalogue of Fishes; a synoptical table of the various families, showing the number of species of each which are included in the Northumbrian fauna, follows; and afterwards comes a reference to the increment to our knowledge which the comparatively recent introduction of the use of the trawl-net on the north-eastern coast has brought about.

The list itself is most full and detailed, and remarkably interesting in character. A certain limited amount of synonymy is given, and a detailed account of what is known as to the distribution. Frequent reference is made to Yorkshire and to Berwickshire records, and local vernacular names are given wherever possible. Due notice is taken of species which have been reported either for Berwickshire or the

Forth area in the one direction, or for Yorkshire in the other, and not for Northumberland and Durham. The species which are represented by actual local specimens in the Museum collection are designated by an asterisk, and—a most important point—their faunal status is always indicated by a letter—R, M, S, or C—the signification being as follows :—

R. Resident ; truly native, and indigenous to the Coast or the adjacent Sea, or to the Burns and Rivers.

M. Migrant ; approaching the Coast or ascending Rivers periodically from deep water to spawn.

S. Straggler ; occurring occasionally on the Coast, a wanderer from the North or South, but not resident.

C. Colonist ; introduced artificially, that is, by human agency, at an earlier or later period, into rivers, lakes, and ponds, and now fully acclimatized.

The total number of species which Mr. Howse includes in the list is 142, as against 155 which are included by Messrs. Clarke and Roebuck in their Handbook of the Vertebrate Fauna of Yorkshire in 1881, and 125 included by Dr. Parnell, in his Natural History of the Fishes of the Firth of Forth, published in 1838. It would be interesting, but time forbids, to pursue the comparison further, so as to ascertain the relative numbers of resident, migrant, straggler, and colonist fish in each of the three areas in question.

An ample index is furnished, after which is given the list of desiderata already referred to.

Altogether, it is but seldom that we meet with sixty-four pages of matter as useful and interesting as that which Mr. Howse has furnished, and it may be regarded as a model which cannot be too soon adopted by the ichthyologists of other counties within our northern area.

NOTES AND NEWS.

A well-known north-country geologist, Mr. J. E. Marr, M.A., Sec.G.S., is among those selected for the honour of F.R.S. Mr. Marr is the author of numerous papers on the geology of the Lake District, Yorkshire, etc.

A fine portrait in photogravure of the late John Hancock accompanies a Memoir of him by his friend Dr. Embleton, from whom we have received a reprint from the Natural History Transactions of Northumberland and Durham.

We have received from Mr. R. Bullen Newton, F.G.S., of the British Museum, a reprint of a paper 'On the Genus *Lévcillia*,' which he published in the Geological Magazine for May. The name only is new, and it is proposed because the former name of the genus—*Porcellia*—is too like the earlier name *Porcellio* borne by a genus of well-known Isopod Crustaceans (wood-lice). Three of the species—*L. puzo* C. Lév., *L. verneuili* D'Orb., and *L. woodwardi* W. Martin—are represented in the British Museum by examples in the Gilbertson collection from Bolland ; the last-named also being found at Winster, in Derbyshire.

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Papers and Records published with respect to the Natural History and Physical Features of the North of England.

PHANEROGAMIC BOTANY, 1888.

THE present instalment comprises the record of botanical activity in the North of England for a single year, so far as concerns the plants included in the London Catalogue of British Plants. Previous instalments of the botanical bibliography have been published in 'The Naturalist' as follows:—For 1884, Nat., Sep. 1885, pp. 331-336; for 1885, Nat., June 1886. pp. 174-179; for 1886, Nat., Dec. 1890, pp. 359-374; and for 1887, Nat., April and May 1891, pp. 125-133.

The counties included are the Watsonian vice-counties of Cheviotland, Northumberland S., Durham, York N.W., N.E., Mid W., S.W., and S.E., Linc. N. and S., Notts., Derby, Cheshire, Lanc. S. and W., Westmorland with Furness, Cumberland, and Isle of Man.

ANON. [signed 'H.B.']. **Westmorland.**

Twelfth Night Custom at Brough [in Westmorland; carrying the Holly Tree (*Ilex aquifolium*)]. Westm. Note Book, Part 1, March 1888, p. 23.

ANON. [not signed]. **Derbyshire.**

[Excursion to Dovedale, by Birmingham Nat. Hist. and Microsc. Society; notes on *Saxifraga granulata*, *S. hypnoides*, *S. tridactylites*, *Arabis hirsuta*, *Myosotis collina*, and *Veronica arvensis*]. Midl. Nat., June 1888, p. 163.

ANON. [Various Observers and Ed. Nat. Hist. Journ.]. **Cumberland, York N.W., N.E., Mid W., and S.W.**

Floral Calendar, 1878-1887 [giving Average Dates for certain specified flowers at each station where observations have been made; the North of England stations are Silloth, Wigton, Cotherstone, Ayton, York, Birstwith, Settle, and Ackworth; the plants were *Corylus avellana*, *Primula vulgaris*, *Ranunculus ficaria*, *Mercurialis perennis*, *Tussilago farfara*, *Viola odorata*, *Anemone nemorosa*, *Caltha palustris*, *Nepeta glechoma*, *Primula veris*, *Stellaria holostea*, *Cardamine pratensis*, *Prunus communis*, *Veronica chamædrys*, *Lychnis diurna*, *Scilla nutans*, *Ranunculus bulbosus*, *R. acris*, *R. repens*, *Plantago lanceolata*, *Orchis mascula*, *Pyrus malus*, *Polygala vulgaris* or *P. serpyllacea*, *Cytisus scoparius*, *Trifolium pratense*, *Crataegus oxyacantha*, *Lotus corniculatus*, *Trifolium repens*, *Myosotis palustris*, *Orchis maculata*, and *Rosa canina*]. Nat. Hist. Journ., June 15th, 1888, xii. 115-116.

ANON. [not signed]. **York S.W.**

The Yorkshire Naturalists' Union [at Saddleworth, 16th June, 1888; several plants noted by English names only]. Research, July 1888, p. 14.

ANON. [not signed]. **York Mid W.**

Liverpool Naturalists' Field Club [at Ingleton, 13th June, 1888; *Convallaria majalis*, *Paris*, *Trollius*, *Meconopsis*, *Primula farinosa*, and *Geranium molle* noted]. Research, July 1888, p. 15.

ANON. [not signed]. **Cheshire.**

Liverpool Science Students' Association [at West Kirby and Hilbre Island; *Thalictrum minus*, *Sedum anglicum*, *Ornithopus perpusillus*, and *Armeria maritima* noted]. Research, July 1888, p. 15.

ANON. [not signed]. **York Mid W.**

Leeds Naturalists' Club [at Bishop Wood, July 1888; *Valerianella olitoria*, *Silaus pratensis*, *Œnanthe fistulosa*, *Iris pseudacorus*, *Hippuris vulgaris*, *Potamogeton crispus*, *P. densus*, *Nasturtium amphibium*, *Artemisia absinthium*, *Ranunculus arvensis* noted]. Research, Aug. 1888, p. 30.

ANON. [not signed]. **York N.E.**

Yorkshire Naturalists' Union [at Robin Hood's Bay, 16th July, 1888: *Ophrys apifera*, *Carex vulpina*, *Agrimonia eupatorium*, *Daphne laureola*, *Myrrhis odorata*, the larger *Equisetum*, *Scolopendrium vulgare*, the *Aspidium aculeatum*, and *Lastrea filix-mas* noted]. Research, Aug. 1888, p. 29.

ANON. [not signed]. **Lanc. S.**

Liverpool Science Students' Association [at Ince Blundell, 14th July, 1888; *Blysmus compressus*, ciliated var. of *Saponaria officinalis*, *Orchis incarnata*, *Iris pseudacorus*, *Myosotis palustris*, *Lychnis githago*, and *Hottonia* noted]. Research, Aug. 1888, p. 31.

ANON. [not signed]. **Derbyshire.**

Liverpool Naturalists' Field Club [at Miller's Dale, July 12, 1888; *Ribes nigrum*, *Geranium sanguineum*, *Asplenium trichomanes*, and *Geum rivale* noted]. Research, Aug. 1888, p. 30.

ANON. [signed 'R.B.L.']. **Durham, York N.W.**

In Upper Teesdale [an angling paper with incidental notice of *Potentilla fruticosa*, *Pinguicula vulgaris*, and *Drosera rotundifolia*]. Field, Aug 11th, 1888, p. 214.

ANON. [not signed]. **York N.W.**

York. The Mount.—Annual Excursion . . . to Wensleydale, June 12th. [*Primula farinosa*, *Trollius*, *Menyanthes*, and *Aquilegia* noted]. Nat. Hist. Journ., Sep. 15th, 1888, xii. 136.

ANON. [not signed]. **York S.W. and N.E.**

Ackworth (Boys') Reports [*Lycopus*, *Chelidonium majus*, *Echium vulgare*, *Vinca major* (Hampole Stubbs), and *Papaver somniferum*, registered for the Ackworth flora for the first time; *Drosera rotundifolia*, *Osmunda*, *Andromeda*, *Hottonia*, *Myrica*, *Empetrum nigrum*, *Vaccinium Oxycoccos*, and *Claytonia perfoliata*, all at Thorne Waste; *Trollius*, *Meconopsis cambrica*, *Atropa belladonna*, *Daphne laureola*, and *Paris*, all at Rievaulx, or between there and Coxwold]. Nat. Hist Journ., Oct. 15th, 1888, xii. 157.

F. H. ARNOLD. **Linc. S.**

Lathyrus tuberosus in Sussex [with a mention (quoted from Gibson's Flora of Essex) that the Rev. W. W. Newbould found specimens in the British Museum, in the Buddle and Petiver collections. Buddle stating 'I had it from the Rev. Mr. John Sedgwick, who gathered it not far from Lincoln, in the north field of Blankney, near the road to Lincoln']. Sci. Goss., Oct. 1888, p. 224.

C. C. BABINGTON. **York N.E.**

List of [163] plants noticed at Fylingdales (Robin Hood's Bay) in September 1882 [distinguishing those additional to M. B. Slater's list]. Nat., Sep. 1888, pp. 265-267.

J. E. BAGNALL. **Lanc. S.**

[Ceratophyllum demersum in fruit from Liverpool, exhibited to Birm. Nat. Hist. and Micro. Soc., Feb. 14th, 1888]. Midl. Nat., March 1888, p. 79.

J. E. BAGNALL. **Derbyshire.**

[Equisetum sylvaticum var. capillare, from Shirley, Derbyshire, exhibited to Birm. N. H. and M. Soc., Mar. 13th, 1888]. Midl. Nat., April 1888, 108.

J. E. BAGNALL. **Westmorland.**

[Plants from Foxfield, Westmorland; *Arctostaphylos uva-ursi*]. Midl. Nat., Oct. 1888, p. 266.

EDMUND J. BAILLIE. **Cheshire.**

Obituary Notice, Mr. John Price, M.A. [died at Chester, 14th Oct., 1887, aged 84, was school-fellow of Charles Darwin at Shrewsbury School, and ultimately became a tutor at St. John's College, Cambs. Cultivated in his garden 'beds filled with huge plants of the giant *Heracleum*,' and he 'carried with him, frequently for weeks at a time, leaves of *Cardamine* [*C. pratensis* ?] in a small phial of water, to watch the process of development of leaf propagation']. Journ. of Bot., Jan. 1888, p. 32.

J. G. BAKER. **Cumberland.**

On the Botany of the Cumberland part of the Pennine Range [about Alston, as observed in the autumn of 1887; the paper, after describing the physical geography and geology, and noting the cultural characteristics of the Super-agrarian Zone, enumerates the whole of the plants, with stations, about 304 in number. The plants of the Infer-arctic zone are then stated by altitudes, after which the best plant-stations are mentioned, and a comparative and statistical summary concludes]. Nat., Feb. 1888, pp. 33-44.

J. BATALHA-REIS. **Cheviotland.**

Note on the Plants and Insects observed at the Wooler Meeting, Sep. 16th and 17th, 1887; list of 35 flowering plants, five ferns, and three lycopods noted]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 10, part 1 (1888), pp. 195-197.

W. H. BEEBY. **Furness.**

On Potentilla reptans and its Allies [mentioning *P. suberecta* Zimm., Lake Lancashire, F. A. Lees in Hb. Bennett]. Journ. of Bot., No. 303, March 1888, xxvi. 78.

ARTHUR BENNETT. **Yorkshire, Lanc. S.**

Notes on the Eighth Edition of the London Catalogue of British Plants [with Yorkshire notes on *Epipactis atro-rubens* and *Potamogeton perfoliatus* (p. 110); notes include *Naias graminea* (Manchester), *Carex leesii* from Yorkshire, and *Carex lepidocarpa* from Yorkshire]. Sci. Gcss., May and June 1888, pp. 110 and 130-131.

JAMES BRITTEN and G. S. BOULGER. **Durham, York Mid W. and S.W.**

Biographical Index of British and Irish Botanists [James Backhouse of York, who died in 1869; referring to his discovery of *Trichomanes radicans* in S.W. Yorks. and of *Viola arenaria* in Teesdale (pp. 85-89); Mr. Bradshaugh, with reference to his finding *Rubus Chamaemorus* on Ingleborough about 1640 (pp. 145-149). Journ. of Bot., March and May 1888, pp. 85-89 and 145-149.

ROBERT BROWN. **Lanc. S., Cheshire.**

Additional Localities to the Flora of Liverpool. Recorded in 1887 since the publication of the Third Appendix; all noticed within the fifteen miles radius [giving stations for 58 species, and a list of 12 Birkenhead ballast-plants]. Proc. Liverpool Nat. F. Club for 1887 (pub. 1888), pp. 22-27.

ROBERT BROWN. **Cheshire, Lanc. S.**

Botanical Résumé [of plants noted at the Liverpool Field Club Excursions of 1887, at Capenhurst and Shotwick, Cheshire, 7th May; Orrell and Upholland, Lanc., 11th June; Little Sutton, Overpool, and Hooton Park, Cheshire, 16th July; Lydiate, Lanc., 6th Aug.; Willaston and Neston, Cheshire, 10th Sept.; and Formby and Freshfield, Lanc., 1st Oct.]. Proc. Liverp. Nat. Field Club for 1887 (publ. 1888), pp. 37-46.

ROBERT BROWN. **Lanc. S., Cheshire.**

Names of Some of the Most Interesting Plants noticed [by the Liverpool Nat. Club] during the excursions in 1887 [enumerating 9 species for Capenhurst and Shotwick, Cheshire, 7th May; 13 for Orrell and Upholland, S. Lanc., 11th June; 17 for Little Sutton and Overpool, Cheshire, 16th July; 19 for Lydiate, Lanc., 6th Aug.; 18 for Willaston and Neston, Cheshire, 10th Sept., and 25 for Formby, Lanc., 1st Oct.]. Proc. Liverp. Nat. F. Club for 1887 (publ. 1888), pp. 47-51.

THOMAS BUNKER. **York Mid W.**

Stratiotes aloides at Carlton near Selby [Oct. 11th, 1888, with *Hydrocharis morsus-ranæ*, *Sium latifolium*, *Iris*, and *Rumex hydrolapathum*]. Nat., Nov. 1888, p. 331.

J. W. CARTER. **York Mid W.**

[Appearance of flowers of Hazel (*Corylus avellana*) at Shipley Glen, both staminate and pistillate, 22nd Jan., 1888; under heading '*Phigalia pilosaria* in January']. Young Nat., March 1888, ix. 63.

JOSEPH CHAPPELL. **Cheshire.**

Captures [at Dunham] near Manchester [of insects on *Galium saxatile* and *Festuca auriuscula*]. Young Nat., Dec. 1888, ix. 238.

A. CRAIG CHRISTIE. **York Mid W.**

Notes on the 'Flora of West Yorkshire' [of F. A. Lees: *Thalictrum alpinum*, *Sagina cu-apetala*, *S. ciliata*, *S. nodosa*, *Melilotus alba*, *Prunus padus*, *Alchemilla arvensis*, *Linaria minor*, *Asplenium septentrionale*, *A. adiantum-nigrum*, *Aspidium lonchitis*, *Nephrodium æmulum*, *Polypodium phegopteris*, *Ophioglossum vulgatum*, and *Lycopodium inundatum* noted for Craven localities, or Mr. Lees' records criticised; criticisms by F. A. Lees on this paper are appended to it]. Nat., Aug. 1888, pp. 225-226.

A. CRAIG CHRISTIE. **York Mid W.**

Thalictrum alpinum L. at Settle [criticising F. A. Lees' notes on this and *Nephrodium æmulum*]. Nat., Sep. 1888, p. 268.

A. CRAIG CHRISTIE. **York Mid W.**

Notes on Settle Plants [in reply to W. Whitwell in respect of *Aspidium lonchitis*]. Nat., Nov. 1888, p. 331.

ESTHER B. CLARK. **York Mid W.**

A Double Celandine [(*Ranunculus Ficaria*) found at Bishopthorpe near York, April 28th, 1888]. Nat. Hist. Journ., May 15th, 1888, xii. 88.

J. E. CLARK. **York N.E.**

[Lathræa squamaria, *Chrysosplenium alternifolium*, and *Scilla nutans* near Byland, Skelton, and Overton]. Nat. Hist. Journ., June 15th, 1888, xii. 111.

WM. CROSS. **Furness and Westmorland.**

Boat-Botanising on Lake Windermere [with note of *Circæa luteliana*, *Lysimachia nemorum*, *Veronica officinalis*, *Viburnum opulus*, *Lobelia dortmanna*, *Carex ampullacea*, *Corydalis claviculata*, *Chrysanthemum leucanthemum*, *Melampyrum pratense*, *Geranium robertianum*, *G. sylvaticum*, *Trollius*, *Iris pseudacorus*, *Melica uniflora*, *Aquilegia vulgaris*, *Linum usitatissimum*, *Thalictrum*, *Solanum dulcamara*, *Hypericum*, and *Scabiosa*, some from Stock Ghyll Force]. Wesl. Nat., Sep. 1888, ii. 220-222.

WILLIAM CROSS. **Lanc. W.**

Roadside gatherings at Arnside [20th Sep., 1888; *Silene inflata*, *Malva sylvestris*, *Geranium lucidum*, *Scabiosa columbaria*, *Tussilago*, *Galium cruciatum*, *Poterium sanguisorba*, *Geum urbanum*, *Pimpinella saxifraga*, *Torilis anthriscus*, *Lactuca muralis*, *Daucus carota*, *Leontodon hispidus*, *Mercurialis perennis*, *Viola odorata*, *V. canina*, *Inula dysenterica*, *Nepeta glechoma*, *Calamintha clinopodium*, *Origanum vulgare*, *Teucrium scorodonia*, *Potentilla reptans*, *Prunella vulgaris*, *Hypericum montanum*, *Rubus fruticosus*, *Alchemilla alpina*, *A. vulgaris*, *A. arvensis*, *Geranium molle*, *G. lucidum*, *G. columbinum*, *G. robertianum*, *G. dissectum*, *Veronica montana*, *Sonchus arvensis*, *Aster tripolium*, *Glaux maritima*, *Scirpus maritimus*, *Plantago maritima*, *Silene maritima*, *Atriplex littoralis*, *Centaurea nigra*, *Malva moschata*, *Tamus*, *Cardnus heterophyllus*, *Œnanthe fistulosa*, *Erigeron acris*, *Apium graveolens*, *Verbascum thapsus*, *Melilotus albus*, *Gentiana campestris*, *Calluna*, *Medicago lupulinus*, *Euphorbia amygdaloides*, *Agrimonia*, and *Epilobium lanceolatum* noted, with habitats]. Wesl. Nat., Nov. 1888, ii. 281-283.

W. CROUCH. **Cheshire.**

[Calluna vulgaris var. alba at about 2,000 feet, nearly at the top of Shutlingslowe, Cheshire, one of the highest peaks of the Pennine chain]. Essex Nat., Dec. 1888, ii. 267.

T. W. EDMONDSON. **York Mid W.**

The Hound's-Tongue [*Cynoglossum officinale*] **at Skipton-in-Craven** [at Hawbank Quarry, with *Gentiana amarella* and *Alchemilla arvensis*]. Nat., Oct. 1888, p. 306.

WILLIAM FOWLER. **Linc. N. and S.**

Lincolnshire Marsh and Water Plants [a list, with stations, of 144 species]. Nat., April 1888, pp. 111-114.

H. E. FOX. **Cheviotland, Durham, York N.W.**

List of . . . Donations to the Museum . . . of the Natural History Society [of Newcastle-on-Tyne], June, 1877, to August, 1887 [1886, *Pyrola rotundifolia* and *Corallorhiza innata*, Newnham Bog; *Centunculus minimus* and *Viola curtisii*, Ross Links, Northumberland; *Zostera nana*, Fenham Flats; *Polygala uliginosa* (=*P. amara* L.) and *Helianthemum vineale* (=*H. canum* E.B.), Cronkley Fell]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 9, part 2 (1889), p. 289.

HILDERIC FRIEND. **Notts.**

Notes on the Flora of North Notts. [*Berberis vulgaris*, *Pimpinella saxifraga* at Walesby, *Senecio sylvaticum*, *Claytonia perfoliata*, and *Carduus marianus* at Ollerton, *Geranium nodosum* at Eakring, and *Echium vulgare* at Apley Head, noted, some as hosts for micro-fungi]. Trans. and 35th Rep. Nottingham Nat. Soc., 1887 (pub. 1888), p. 33.

HILDERIC FRIEND. **Lanc. S. or W.?**

A Rare British Fungus [found on *Ornithogalum umbellatum* growing in Lancashire, by Wm. Cross of Lytham]. Wesl. Nat., June 1888, ii. 107-109.

HILDERIC FRIEND. **Cumberland.**

A Cumberland Moss [describing a visit to one, on or near which grew Bird-cherry (*Prunus padus*), Meadow Geranium (*G. pratense*), Water Avens (*Geum rivale*), *Myrica gale*, Marsh Valerian (*Valeriana dioica*), Globeflower (*Trollius europæus*), *Ranunculus lingua*, *Primula farinosa*, *Crepis paludosa*, *Menyanthes*, and *Utricularia*]. Wesl. Nat., July 1888, ii. 142-144.

HILDERIC FRIEND. **Cumberland.**

The Eden and Solway [noting plants observed in walking from Carlisle to the Solway along the Eden; *Arabis hirsuta* (alien), *Sanguisorba officinalis* (do.), *Melilotus officinalis*, *Medicago sativa*, *Allium carinatum*, *Origanum vulgare*, *Calamintha acinos*, *Leonurus cardiaca*, *Ballota nigra*, *Tanacetum vulgare*, *Conium maculatum*, *Œnanthe fistulosa*, *Myrica gale*, *Menyanthes trifoliata*, *Comarum palustre*, *Andromeda*, *Apium graveolens*, *Armeria vulgaris*, *Butomus umbellatus*, *Ranunculus sceleratus*, *Triglochin*, *Senecio viscosus*, *Parietaria*, *Echium vulgare*, *Brassica Monensis*, *Geranium sanguineum*, *Rosa spinosissima*, *Eryngium maritimum*, *Cakile maritima*, *Carex arenaria*, *Brassica oleracea*, *Carduus tenuiflorus*, *Plantago maritima*, *Medicago falcata*, *Polygonum maculatum*, *Echinospermum lappula*, *Sisymbrium sophia*, *Centaurea melitensis*, *C. calocephala*, *Lathyrus sylvestris* (Everlasting Pea), *Trifolium arvense*, *Melilotus albus*, *Raphanus maritimus*, *Spergularia rubra*, *Crithmum maritimum*, *Hieracium umbellatum*, *H. boreale*, *H. pilosella*, *Pyrola minor*, *Utricularia*, *Primula farinosa*, *Botrychium lunaria*, and *Carex extensa* noted]. Wesl. Nat., Sep. 1888, ii. 207-209.

W. A. GAIN. **Notts.**

[Colour-]Varieties of Viola odorata [near Tuxford, Newark, Notts.]. Nat., July 1888, p. 193.

J. GARDNER. **Durham.**

Larvæ of Deilephila galii at Hartlepool [on the sand-hills, found on *Galium verum*, 23rd Sep., 1888]. Nat., Oct. 1888, p. 286.

F. GAYNER and B. S. ROWNTREE. **Lanc. S.**

A Day on the Southport Sand-hills [June 9th, 1888; *Pyrola rotundifolia* var. *maritima*, *Ammophila arundinacea*, etc., noted]. Nat. Hist. Journ., Sep. 15, 1888, xii. 122.

M. E. GILL. **Westmorland and Furness.**

[Plant] Rarities [*Lobelia dortmanna* from Windermere]. Nat. Hist. Journ., May 15th, 1888, xii. 89.

ALLAN B. HALL. **York N.E.**

Rosette Variety of Geum (*G. rivale*) [more plentiful than type in Flazendale, off Ryedale, covering many acres]. Nat. Hist. Journ., Feb. 15, 1888, p. 23.

A. B. HALL. **York N.E. and Mid W.**

Double Water-Crowfoot (*Ranunculus aquaticus*) [at Gormire near Thirsk, and at Swillington near Leeds]. Nat. Hist. Journ., Nov. 1st, 1888, xii. 177.

ALLAN B. HALL. **York Mid W. and N.E.**

Rarities [near Leeds, *Actea spicata* and *Ulex nanus*; and near Thirsk, *Atropa belladonna*]. Nat. Hist. Journ., Nov. 1st, 1888, xii. 178.

FREDERICK J. HANBURY. **York Mid W., Durham or York N.W.**

Notes on Some Hieracia new to Britain [*H. bifidum* Kit., Teesdale; *H. friesii* Htm., Ingleborough (F. A. Lees); *H. angustum* Lindeb. = *H. crocatum* v. *angustatum* Fr., Teesdale]. Journ. of Bot., No. 307, July 1888, xxvi. 204-206.

W. C. HEY. **York Mid W.**

Silene nutans still at Knaresborough [particulars and dates given]. Nat., Nov. 1888, p. 331.

J. M. HICK. **Northumberland S.**

Address to the Members of the Tyneside Naturalists' Field Club . . May 16th, 1887 [notes on field excursions: *Lamium maculatum* at Shotley Bridge, 31st May; *Vaccinium Oxycoccos* at Whinnetly Moss; *Menyanthes* at Broomlee Lough; *Clematis vitalba* at Cresswell]. Nat. Hist. Trans. Northb. Durh. and Newc., vol. 10, part 1 (1888), pp. 3, 4, and 14.

J. B. HODGKINSON. **Westmorland and Furness.**

Northern Lepidoptera in 1887 [with a reference to the vitality of *Impatiens noli-me-tangere* at Windermere]. Ent., April 1888, xxi. 108.

WM. HODGSON. **Cumberland.**

Linaria minor in Cumberland [two or three stations noted]. Nat., Feb. 1888, p. 44.

ABRAHAM HOLROYD. **York Mid W. and S.W.**

Yorkshire Proverbs an' Speyks [As blake (yellow) as a Paigle (*Primula veris*); As wick as a Whin (*Ulex europæus*); In Dock (*Rumex*, sp.?) an out Nettle (*Urtica dioica*); Th' hedge stinks were th' hippins hing]. Yorkshire Folk-Lore Journ., part 11, April 1888, pp. 217-224.

H. HYDE. **Cheshire.**

[Exhibition of *Camelina sativa*, *Neslia paniculata*, *Saponaria vaccaria*, *Silene dichotoma*, and *Salvia verticillata*, found on a refuse heap, canal bank at Bollington, Cheshire, 1886]. Mem. and Proc. Manch. Lit. and Phil. Soc., Jan. 16th, 1888, Series 4, vol. 1, 1888, p. 88.

J. ISMAY. **York S.W.**

Extracts from the Diary of the Rev. J. Ismay [of Mirfield: 1736—Apple blossom (*Pyrus malus*) nine times and ripe fruit five times; in blossom on Christmas Day, and a red Rose (*Rosa canina*?) full blown in the hedge by it; 1756, July 5th, Apple and Plum (*Prunus communis*) trees in blossom a second time this year in my garden; 1768, the Yew tree (*Taxus baccata*) now growing near the S.E. corner of the churchyard was planted by Thos. Sherrd, clerk, 5th Nov., 1673, as appears by an entry in the parish register; the other two Yews are so very ancient that no man living can remember them in a youthful state]. Yorksh. Notes and Queries, part 10, Jan. 1888, pp. 190-201.

J. ISMAY. **York S.W.**

Some Account of the Parish of Mirfield (by Mr. Ismay). to a Friend in Cumberland, 1755 [speaks of there being 250 sorts of wild plants growing spontaneously in the wood, field, pastures, and waste grounds, the poisonous plants being the *cicuta* or the Lesser Hemlock (?), the Common Night-shade (*Solanum nigrum*), Black Henbane (?), Cynocrambe (?), Yew tree (*Taxus baccata*); particulars given as to last-named; the crops also are mentioned]. Yorksh. Notes and Queries, pt. 10, Jan. 1888, 205-6.

P. Q. KEEGAN. **Isle of Man.**

In the Isle of Man [with notes on its botanical features, and list of numerous plants personally observed]. Science Gossip. April 1888, p. 75.

R. E. LEACH. **York Mid W., Westmorland.**

Some Ingleton Plants [stating localities for *Convallaria majalis*, *Polygonatum multiflorum*, *Daphne mezereum*, *Asplenium germanicum*, *Epilobium hirsutum*, *Aspidium lonchitis*, *Pinguicula vulgaris*, *Primula farinosa*, *Trollius*, *Polypodium dryopteris*, *P. phegopteris*, *Ophrys muscifera*, and *Ceterach officinarum*]. Nat., April 1888, p. 119.

P. FOX LEE. **York S.W.**

The Yorkshire Naturalists' Union at Hatfield Chace [21st Sept. 1887: plants noted were *Rosa lutetiana*, *Andromeda*, *Drosera rotundifolia*, *Calluna*, *Erica tetralix*, *Myrica*, *Osmunda* (not found), *Epilobium angustifolium*, *Rhynchospora alba*, *Eriophorum vaginatum*, *Stellaria aquatica*, *S. glauca*, *Hydrocotyle vulgaris*, *Hippuris vulgaris*, *Potamogeton pusillus* var. *tenuissima*, *Myriophyllum*, *Carex pseudocyperus*, *Papaver dubium*, *Spergularia rubra*, *Erodium cicutarium*, *Rubus suberectus* var. *fissus?*, *Dipsacus sylvestris*, *Scleranthus annuus*, *Hordeum murinum*, and *Senecio sylvaticus*]. Nat., Mar. 1888, pp. 85-87.

P. FOX LEE. **York S.W.**

Sparganium ramosum var. microcarpum in Yorkshire [near Bretton; the var. is new as British, and was determined by Arthur Bennett]. Nat., July 1888, p. 200.

P. F. LEE. **York S.E.**

Yorkshire and Lancashire Naturalists at Saddleworth [16th June, 1888; *Rubus chamaemorus*, *Cardamine amara*, *Viola palustris*, *Epilobium angustifolium*, *Vaccinium vitis-idæa*, *Empetrum nigrum*, *Scirpus cæspitosus*, *Narthecium ossifragum*, *Eriophorum angustifolium* var. *elatius* Koch, *Drosera rotundifolia*, *Luzula campestris* var. *erecta* Desv., *Carex pilulifera*, *C. flava* var. *minor* Towns., *Polypodium dryopteris*, *Cystopteris fragilis*, *Nephrodium oreopteris*, *N. filix-mas* var. *borreri Newm.*, and *Hymenophyllum unilaterale* noted, and *Malaxis* searched for without success]. Nat. July 1888, p. 213.

FREDERIC ARNOLD LEES. **York N.W., Mid W., and S.W.**

The Flora of West Yorkshire, with a sketch of the climatology and lithology in connection therewith . . London . . 1888 [a portly volume of 844 pages, of which the climatology occupies 62, the lithology 22, the bibliography 16, the phanerogamic flora 303, the cryptogamia 333, appendices and indexes 101; the lithological chapter is accompanied by a coloured map; the flora, which includes 1042 numbered and numerous unnumbered (as erroneous, extinct, or alien) flowering plants and vascular cryptograms, concernimg each of which is stated its local names, ante-Linnean designations, vice-comital distribution, localities arranged under river basins, lithological restrictions, floristic status, habitat, relative abundance, and months of appearance; detailed reviews are found in Journal of Botany, No. 307, July 1888, xxvi. 219-222: Ann. and Mag. Nat. Hist., Aug. 1888, 6th S. ii. 186-188, by A. Bennett; Wesley Nat., May 1888, ii. 73 76, by Hilderic Friend, who gives additional records for Sedbergh and Anston districts; Field, 21st April, 1888, p. 583; etc.].

F. A. LEES. **York Mid W.**

Notes on the [R. E. Leach's] List of Ingleton Plants [anent *Asplenium germanicum*, *A. ruta-muraria*, *Aspidium lonchitis*, *A. aculeatum*, *Epilobium hirsutum*, *E. angustifolium*, *Polygonatum multiflorum*, *P. officinale*, *Daphne mezereum*, *Ophrys muscifera*, and *Ceterach*]. Nat., June 1888, p. 160.

F. A. LEES. **York Mid W.**

Notes on the 'Flora of West Yorkshire' [anent *Thalictrum alpinum*, *Nephrodium æmulum*, and *Asplenium septentrionale*; a criticism on a note by A. Craig-Christie]. Nat., Aug. 1888, p. 226.

F. A. LEES. **York N.W.**

Ceterach officinarum in Wensleydale still [station not precisely indicated; previous records discussed]. Nat., Aug. 1888, p. 246.

F. ARNOLD LEES. **York Mid W.**

A New West Yorkshire Plant (*Pyrola rotundifolia*) [found at Outershaw in Langstrothdale, 1,200 ft. alt., by Trevor Basil Woodd]. Nat., Sep. 1888, 267.

F. ARNOLD LEES. **Lanc. W., York Mid W., N.W., and S.W.**

Notes on the West Yorkshire Flora [22 species mentioned, with critical remarks and details of localities]. Nat., Oct. 1888, pp. 303-306.

B. B. LETALL. **York N.E.**

[Plants seen at Ampleforth, May 24th, 1888; *Cardamine amara*, *Acer campestre*, *Inula helenium*, *Vinca minor*, *Myosotis sylvatica*, and *Paris*]. Nat. Hist. Journ., June 15th, 1888, xii. 111.

B. B. LETALL. **York N.E., Mid W.**

Orchis Morio and O. mascula near York [their relative abundance; numerous stations cited, anent W. Whitwell's remarks quoted in Lees' Flora of West Yorkshire]. Nat. Hist. Journ., Nov. 1st, 1888, xii. 177.

B. B. LETALL. **York Mid W., N.E.**

Late Flowers [*Pyrus japonica* at Dringhouses, 18th Aug.; *Hottonia*, Askham Bog, 25th Aug.; *Caltha*, Tillmire, 13th Sept.; *Veronica chamædrys*, Castle Howard, 20th Sept.; *Salix repens*, Strensall Common, 19th Sept., and *Fragaria vesca*, Buttercrambe Moor Wood, 26th Sept., 1888; also *Samolus valerandi* and *Lithospermum officinale* near Allerton]. Nat. Hist. Journ., Nov. 15th, 1888, xii. 202.

W. R. LINTON. **Derbyshire.**

South Derbyshire Plants [notes on plants about Shirley; *Ranunculus penicillatus* Hiern, *Viola reichenbachiana* Bor., *Stellaria neglecta* Weih., *S. umbrosa* Op., *Medicago maculata* Sibth., *Prunus cerasus* L., *P. insititia* L., three species of *Rubus*, six of *Rosa*, four of *Epilobium*, *Ribes uva-crispa* L., *Taraxacum officinale* var. *erythrospermum* Andrz., *Sonchus arvensis* var. *glabra* Lond. Cat.; *Primula vulgaris* and *P. veris* vars., *Cuscuta trifolii* Bab., *Mentha viridis* L., *M. rubra* Sm., *M. piperita* Huds., *Betula glutinosa* Fr., three of *Salix*, *Juncus diffusus* Hoppe, *J. supinus* Mœnch. var. *kochii* Syme, *Potamogeton serratus* Huds., five of *Carex*, *Arrhenatherum nodosum* Rchb., *Bromus arvensis* L., *Agropyron repens* Beauv. var. *barbata* Duv.-Jouve. Boreal character of district shown by absence of four species and presence of four others, all named, while 19 species and varieties are enumerated as new county records]. Journ. of Bot., No. 311, Nov. 1888, xxvi. 329-331.

F. C. LONG. **Lanc. S.**

A Queer Place for Shells [and for *Anacharis alsinastrum*; the engine cistern (60 ft. above canal) at Gannow Weaving-shed, Burnley]. Sci. Goss., Dec. 1888, p. 281.

EDWARD S. MARSHALL. **Westmorland.**

Hieracium Gibsoni Backh. **and Carex irrigua** Hoppe **in Westmoreland** [gathered in July 1883: the first on mountain limestone near Kirkby Stephen, and the second in a bog above the Mazebeck, between Caldron Snout and Highcup Scar, both plants stated to be 'additions to the county flora']. Journ. of Bot., No. 301, Jan. 1888, xxvi. 27.

E. S. MARSHALL. **York N.W. and ? Durham.**

Notes on Highland Plants [with a casual reference to *Viola sylvatica* on Cronkley Fell, and *Plantago maritima* in Upper Teesdale]. Journ. of Bot., No. 305, May 1888, xxvi. 150-153.

J. J. MARSHALL. **York S.E.**

Goodyera repens in Yorkshire [at Houghton Wood near Market Weighton, 6th Aug., 1888; habitat described]. J. of Bot., No. 312, Dec. 1888, xxvi. 379.

J. A. MARTINDALE. **Westmorland and Furness.**

Our District [Westmorland and Furness, defined, described, divided into six river basins, and illustrated by an excellent map; each of these is described and its Botany characterised, and lists of the rarer plants given; the vice-county flora stated to amount to 897 plants]. Westm. Note Book and Nat. Hist. Record, Part 1, March 1888, pp. 1-19, and folding map.

G. E. MARTINDALE. **Westmorland and Furness.**

List of [39] Sedges [recorded for Westmorland and Furness, showing the river basins in which gathered]. Westm. Note Book and Nat. Hist. Record, Parts 1 and 2, March and June 1888, pp. 26-27.

G. E. MARTINDALE [not signed]. **Westmorland.**

Orchis pyramidalis in Westmorland [found on the banks of Leith. between Cliburn and Melkinthorpe]. Westm. Note Book and Nat. Hist. Record, Vol. 1, part 3, Sept. 1888, p. 66.

JAS. EARDLEY MASON. **Linc. N.**

Polystichum angulare in North Lincolnshire [in Withern parish, found by Miss Susan Allett; identified by F. A. Lees]. Nat., April 1888, p. 102.

JAS. EARDLEY MASON. **Linc. N.**

Carduus acaulis in North Lincolnshire [found on the Chalk Wolds at South Ormesby, by J. B. Davy, on the 6th August, 1888; name confirmed by F. A. Lees]. Nat., Sept. 1888, p. 284.

W. NARRAMORE. **Lanc. S.**

A Phenomenon [with incidental mention of *Ranunculus aquatilis* near Huyton, S. Lancs.]. Research, July 1888, p. 11.

J. I. NEWTON. **Lanc. S.**

Rambles during the year 1887.—Ashton-under-Lyne [30th July; *Hottonia palustris*, *Ranunculus aquatilis*, *Lemna minor*, *L. trisulca*, *Potamogeton natans*, *Hydrocharis morsus-rana*, *Alisma plantago*, *Epilobium angustifolium*, *Hippuris vulgaris*, and *Stratiotes aloides* noted in or near ponds, Ashton Moss]. Ann. Rep. Manch. Microsc. Soc. for 1887 (pub. 1888), pp. 66-7.

E. A. PEAK. **York S.E.**

The Yorkshire Naturalists' Union at Welton Vale [27th Aug., 1887; 111 flowering plants and ferns enumerated as found, and stations cited for several of them]. Nat., Feb. 1888, pp. 46-47.

JOHN PERCIVAL. **York N.W.**

The Flora of Wensleydale, North-West Yorkshire [enumerating about 600 species, with stations]. Nat., May 1888, pp. 125-143.

JOHN PERCIVAL. **York N.W.**

The Flora of Wensleydale: Additions [16] and Corrections [one]. Nat., June 1888, p. 159.

JNO. PHILIPSON. **Durham, York Mid W.**

Address to the . . . Tyneside Naturalists' Field Club . . . May 9th, 1888 [notes of field excursions: *Myosotis*, *Orchis mascula*, *Primula vulgaris* at Whitfield on Allen, May 30th, 1887: *Potentilla fruticosa*, *Polygonum viviparum*, *Habenaria bifolia*, and *Gymnadenia conopsea* at High Force, 27th June; *Helianthemum canum*, *Arenaria verna*, *Tofieldia*, *Gentiana verna*, *Lycopodium alpinum*, *Rubus chamaemorus*, on Cronkley Fell same day; *Scolopen-*

drium at How Stean Beck, *Myrrhis odorata* at Lofthouse, *Circæa lutetiana*, *Hypericum*, *Erica* or *Calluna*, *Vaccinium myrtillus* on the Nidd slope of Bewerley Moor, Aug. 2nd; *Ophrys apifera* at Roker Dene, formerly]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 10, part 1 (1888), pp. 183-202.

GEORGE T. PORRITT. **Isle of Man.**

[Plants noted during] an Entomological Expedition to . . . and the Isle of Man [in Aug. 1887; *Statice armeria*, *Fraxinus*, *Silene inflata*, and *Eupatorium cannabinum*]. Nat., April 1888, pp. 104-106.

E. P. QUINN. **Cheshire.**

Rambles during the year 1887.—Ashley [June 11; the pond produces Bladderwort (*Utricularia*, species unstated)]. Ann. Rep. Manch. Microsc. Soc. for 1887 (pub. 1888), pp. 63-64.

E. P. QUINN. **Cheshire.**

On a Vegetable Trap [the Bladderwort (*Utricularia*, species not mentioned) which is often found in the ponds abounding on the Cheshire side of Manchester; description, etc., given]. Research, Dec. 1888, p. 89.

LAWRENCE RICHARDSON. **Cumberland, York N.W., N.E., Mid W., S.W.**

Floral Calendar, 1888 [as observed at Silloth, Wigton, Cotherstone, Thirsk, York, Settle, Rawdon, Leeds, and Ackworth; the species same as in the 1878-1887 averages; averages given, and names of observers]. N.H.J., Oct. 15, 1888, xii. 165-166.

A. S. ROWNTREE. **York N.E.**

York, Botham, May 3rd [at Skelton, the Blue-bells (*Scilla nutans*) in their beauty]. Nat. Hist. Journ., June 15th, 1888, xii. 113.

A. S. ROWNTREE. **York N.E.**

York, Botham [Excursion to Scarborough, June 14, 1888; *Helleborus viridis*, *Aquilegia*, *Pyrola*, *Trientalis*. *Habenaria viridis*, *Maianthemum*, and *Polypodium phegopteris* noted]. Nat. Hist. Journ., Sept. 15th, 1888, xii. 136.

A. S. ROWNTREE. **York N.E.**

[Castle Howard Excursion, Sep. 18th, 1888; *Parnassia* in Cranbeck Valley and *Vicia sylvatica* near the station]. N.H.J., Oct. 15th, 1888, xii. 163.

W. H. SATTERTHWAITE. **York N.E.**

[York Plants: Lilies-of-the-Valley (*Convallaria majalis*) in Nova Scotia Wood and *Barbarea stricta* on Clifton Ings]. N.H.J., June 15th, 1888, xii. 111.

M. B. SLATER. **York N.W.**

The Yorkshire Naturalists' Union in Lower Wensleydale [at Leyburn, 21st May, 1888; *Cardamine amara*, *Cochlearia officinalis*, *Viola lutea*, *Geranium lucidum*, *Saxifraga granulata*, *Prunus padus*, *Myrrhis odorata*, *Adoxa moschatellina*, *Parietaria diffusa*, *Orchis mascula*, *Sax. hypnoides*, and *Lathræa*, noted]. Nat., June 1888, p. 177.

M. B. SLATER. **York N.E.**

The Yorkshire Naturalists' Union at Robin Hood's Bay [16th July, 1888; list of 78 flowering plants and six ferns noted]. Nat., Aug. 1888, 238-40.

M. B. SLATER. **York S.E.**

The Yorkshire Naturalists' Union at Market Weighton [6th Aug., 1888; 28 plants and seven ferns noted as seen]. Nat., Sep. 1888, pp. 279-280.

MATTHEW B. SLATER. **York S.E.**

Spiræa filipendula in South-East Yorkshire [notes of three stations]. Nat., Oct. 1888, p. 306.

M. B. SLATER. **York S.E., Cumberland.**

Goodyera repens near Market Weighton [Aug. 1888; correction of mis-record as *Spiranthes autumnalis*; first record for Yorkshire]. Nat., Oct. 1888, p. 312.

C. E. STANSFIELD. **York Mid W.**

Rawdon [Sep. 5th, *Lycopus europæus*, *Cichorium intybus*, and *Bidens tripartita* reported for the first time]. N.H.J., Oct. 15th, 1888, xii. 159.

C. E. STANSFIELD. **York Mid W.**

Notes from our Stations . . . Rawdon (nr. Leeds) [eight plants new to the district, *Viola odorata*, *Geum rivale*, *Lathræa squamaria*, *Aquilegia*, *Cardamine amara*, *Valeriana dioica*, *Carex præcox*, and *Ranunculus lingua*; and new locality for *Primula vulgaris*]. N.H.J., Oct. 15th, 1888, xii. 167.

G. SWAINSON. **Isle of Man.**

On the Dalby Rocks [Isle of Man, grow *Glaucium luteum* (abundant), *Asplenium marinum*, and *Osmunda regalis*; also *Samolus valerandi*, *Artemisia maritima*, *Crithmum maritimum*, *Sagina maritima*, *Sedum telephium*, *Hypericum androsæmum*, *Plantago maritima*, *P. coronopus*, *Asplenium germanicum*, and *Adiantum capillus-veneris* enumerated]. Wesl. Nat., Nov. 1888, ii. 263 and 268.

TATTON SYKES. **York S.E.**

Large Silver Fir [in the park at Sledmere; dimensions given, also of a large Larch (*Larix europæa*); the Silver Fir (*Pinus sylvestris*) grows very rapidly when planted on the Yorkshire Wolds]. Field, May 5th, 1888, 660.

E. H. TURNER. **Cheshire.**

[Anacharis alsinastrum at Bramhall, 2nd July, 1887]. Ann. Rep. Manch. Microsc. Soc. for 1887 (pub. 1888), p. 34.

C. H. WADDELL. **Westmorland and Furness.**

List of Fungi . . . growing in the District round Kendal [mentioning *Caltha palustris*, *Ranunculus ficaria*, *Viola canina*, *Allium ursinum*. *Polygonum bistorta*, *Alchemilla vulgaris*, *Campanula rotundifolia*, *Salix caprea*, *Poterium sanguisorba*, *Anemone nemorosa*, *Myrica gale*. *Heracleum sphondylium* and *Angelica sylvestris* as hosts, with localities, etc.]. Westm. Note Book and Nat. Hist. Record, Vol. 1, part 3, Sept. 1888, pp. 61-63.

WILLIAM WEST. **York Mid W., S.W., and N.W.**

Additional Localities for the Vascular Plants of the West Riding Flora [notes on 67 species; also on one *Chara*]. Nat., Oct. 1888, pp. 299-302.

WM. WEST. **York S.E.**

Goodyera repens near Market Weighton, S.E. Yorks. [gathered in Houghton Hall Woods, Aug. 1888; at first reported as *Spiranthes autumnalis*]. Nat., Oct. 1888, p. 312.

F. B. WHITLOCK. **Notts.**

Varieties of Viola odorata [in South Notts.]. Nat., Aug. 1888, p. 246.

WILLIAM WHITWELL. **Westm., Durh., York Mid W. and N.W.**

Notes on Settle Plants [in criticism of A. Craig-Christie's notes; with information as to the Settle and Craven occurrences of *Aspidium lonchitis*. *Nephrodium æmulum*, and *Thalictrum alpinum*]. Nat., Oct. 1888, p. 307.

J. RUSSELL WILDMAN. **Lanc. S.**

[Potamagun (sic) **crispus and Anacrhais** (sic) *alsinastrum* recorded as the chief weeds in a pond at Burnley in which *Planorbis dilatatus* occurs]. Sci. Goss., Sep. 1888, p. 209.

NOTES AND NEWS.

The question as to the validity of *Cyclostoma* as a generic name in conchology —raised by Mr. R. Bullen Newton – is discussed by Rev. Canon Norman, F.R.S., in an article in the May number of the Annals and Magazine of Natural History, wherein he arrives at a conclusion quite the reverse of Mr. Newton's. The latter gentleman, however, stands to his guns in the June number, and throws his facts into the form of a chronological table.

THE YORKSHIRE NATURALISTS' UNION IN UPPER SWALEDALE.

[Apology is due to readers—and hereby offered—for the tardy appearance of this report, but indulgence will readily be conceded by all who learn that it was caused by a complication of most serious illnesses from which Mr. Goodchild, whose geological account was indispensable, has suffered for several months, and from which he has only lately recovered].

The August bank-holiday excursion of last year was fixed for Upper Swaledale, particularly the part lying around the villages of Keld and Muker, and the remarkable hillock of Kisdon; and was arranged as a three-days' or week-end excursion, the district being far too inaccessible for a single day's investigation. Arrangements had been previously carefully made by the Secretaries for the accommodation of members, this being rendered more than usually necessary from the fact that inns are both few in number and far apart in such a remote district. The greater number of the members stayed at 'The Cat-hole' at Keld, and others were lodged at the Joiners' Arms at Thwaite, and at the Farmers' Arms and the Queen's Head at Muker. The Union were particularly fortunate in having as their leader Mr. J. G. Goodchild, F.G.S., of H.M. Geological Survey, by whom the district was geologically surveyed some sixteen years ago, and who may therefore be considered (in a much more literal and accurate sense than that in which the phrase is often used) to know every inch of the ground. This, and his genial companionship, made the excursion a success in every way, both as regards the scientific results achieved and the enjoyment of it by the members present.

The actual proceedings commenced on Saturday, the 2nd August, when Mr. Goodchild led a party of members, who started about mid-day from Askrigg Station, although a few were on the ground early on Friday morning.

A second party, arriving at Askrigg late in the afternoon of Saturday, were conducted over the moor to Keld by Mr. W. Denison Roebuck, F.L.S., and another party (from Skipton) walked over from Hawes to Keld about the same time. The distance from Askrigg to Keld being about eight miles, and much of it being performed by the second party in the dark, all were glad to reach their inns. Mr. Goodchild's party, travelling by daylight, were more fortunate, and learnt much from him en route, as they traversed the outcrops of the various strata, first up the Wensleydale and then down the

Swaledale slope of the hill-range—here attaining an elevation of 1,800 ft. in the passes and over 2,000 ft. on the hill-summits—which divides the two dales.

Sunday was a quiet day, and the weather being fine and pleasant, a most enjoyable one. Some of the members went to hear a sermon which was preached with special reference to the visit of the naturalists by the Rev. W. Crombie, who is himself a botanist, and, along with Mr. George Fawcett of Thwaite, pays attention to the flora of the district. The Swinnergill Kirk was also visited, a quaint cave, round which are some extraordinary dislocations in the strata, while others visited the slopes and summit of Kisdon, the picturesque waterfalls of Kisdon and Cat Rake Forces, etc. On Monday the vicinity of Kisdon and Keld were still further investigated during the forenoon, and at noon the usual business meeting was held in the Literary Institute at Muker. There was but scant time available, so that the proceedings were cut short, and sectional reports not being given, so that the meeting was very unlike those which are usually held after Union excursions. There was a good attendance of the members who had taken part in the excursion, and a few visitors. The Rev. R. V. Taylor, B.A., vicar of Melbecks, who has long been a member of the Union, was voted to the chair, and was supported by the vicar of Muker. The minutes having been postponed, Mr. W. Lower Carter, M.A., F.G.S., of Leeds, was elected a member of the Union. It was then resolved, on the motion of Mr. Roebuck, seconded by Mr. William Horne, F.G.S., of Leyburn, that the vacancy in the secretaryship of the Geological Section caused by the death of Mr. Adamson should be filled up by the appointment of Mr. Carter. It was next resolved that Mr. Chas. P. Hobkirk, F.L.S., of Dewsbury, be the delegate to represent the Union at the forthcoming meeting of the British Association at Leeds, and that the Rev. E. P. Knubley, M.A., and Mr. W. Cash, F.L.S., Halifax, be his two colleagues on the General Committee of the Association. A hearty vote of thanks was then passed—on the motion of Mr. M. B. Slater, F.L.S., Malton, seconded by Mr. Herbert Prodham, of Allerston—to Mr. Goodchild for his able and genial leadership of the excursion. Thanks were also voted—on the motion of Mr. R. B. Cook, of York—to Captain Lyell and Mr. Alderson of Keld, for the permission so freely granted for members to visit their estates in the valley, to the Committee of the Muker Literary Institute for the use of their room, and to the various leaders of parties. It was announced that the Sectional reports were to be sent to the Secretary for publication, and a vote of thanks to the Rev. R. V. Taylor for presiding concluded the proceedings. It may be added that

at the excursion eleven societies were represented, viz., Cleveland, Harrogate, Leyburn, Scarborough (two), Craven, Leeds (three), Malton, and York.

The main body of the members then started under the leadership of Mr. Goodchild for Hawes, viâ the Buttertubs Pass and Hardra Fors.

The Sectional Reports, for which there was not time at the meeting, were sent in afterwards as follows :—

The Vertebrate Section does not appear to have been represented at all, and consequently no report was submitted—an almost unprecedented event in the history of this usually most active body of members.

For the Conchological Section, Mr. W. Denison Roebuck, F.L.S., who was the sole representative, and who had in previous years paid attention to the mollusca of the district, reported that but little had been done, from the dryness of the season. The following species were taken in the immediate vicinity of Kisdon Force and round Keld :—

Arion ater.
Arion hortensis.
Arion bourguignati.
Limax agrestis.
Vitrina pellucida.
Zonites cellarius.
Zonites alliarius.
Zonites glaber.
Zonites nitidulus.
Zonites purus.
Zonites crystallinus.
Helix arbustorum.
Helix rufescens.
Helix hispida.
Helix sericea.
Helix rotundata.
Helix rupestris.
Balea perversa.
Clausilia rugosa.
Clausilia dubia.
Clausilia laminata.
Azeca tridens.
Zua lubrica.
Limnæa truncatula.
Limnæa truncatula var. minor.

Altogether 24 species only, of which there is but one, *Clausilia laminata*, which is an addition to the published list for the district, (see 'Naturalist,' August 1890, pp. 229-233). This is not a very satisfactory record for so productive a district.

The Botanical Section was represented by its Cryptoganic Secretary, Mr. M. B. Slater, F.L.S., of Malton, and there were also present, among others, Mr. Richard Barnes, of Saltburn, and Mr. Thomas F. Ward, of Middlesbrough, the latter of whom has furnished a list of 133 plants observed, of which the following are the rarer and most interesting species :—

Thalictrum minus.
Draba incana.
Cochlearia officinalis.
Geranium sylvaticum.
Geranium lucidum.
Epilobium angustifolium.
Peucedanum ostruthium.
Carduus heterophyllus.
Campanula latifolia.

Ferns.

Polypodium calcareum.
Asplenium viride.

The Geological Section was represented by Mr. S. Chadwick, F.G.S., one of its Secretaries, and other geologists, and had the great advantage of the presence and guidance of Mr. J. G. Goodchild, F.G.S., who furnishes the following account of the investigations of this section:—

On arrival on the Saturday at Askrigg Station, and starting from the horizon of the two uppermost subdivisions of the Mountain Limestone as defined by Phillips—the Muker Limestone (Smiddy Limestone of Alston Moor) and the overlying Askrigg Limestone (Little Limestone of the same district)—the party crossed the various subdivisions of the Yoredale Rocks as the hillside north of the town (Askrigg) was ascended. The actual rocks themselves are not clearly laid bare along the whole of the route; but (as Prof. Phillips has shown in his 'Geology of Yorkshire') beck-sections and other exposures east and west of the road show the following succession, the lowest rock being named first:—top of the Askrigg or Aysgarth Limestone, thick black shale (Hardra Shale), Sandstone of Hardra Fors, Hardra Limestone (the Jew Limestone of the Alston district), *thin* bed of shale, repeated alternations of sandstone, shale, and thin limestone, Simonstone Limestone (the Tyne-Bottom Limestone) shale, alternations of sandstone and shale, with thin but very persistent beds of limestone (two are respectively known as the Cockle Shell and the Post Limestones in the country to the north-west), Middle Limestone, Fifth Sett (or Scar Limestone) shales and sandstones, Fourth Sett (Five Yards Limestone) shales and sandstones, Third Sett (Three Yards Limestone) shales and sandstones (Nattrass Gill Hazle), Lower Undersett Limestone (Four Fadom) shale, passing northward into the Quarry Hazle, Upper Undersett, or Undersett Chert (Limestone Post), shales, sandstones, Main, Twelve Fadom, or Great Limestone, Main Chert, Black Beds, Shales and Coal Sills, Red Beds Limestone and Chert, shales, Ten Fadom Grit, Crow Limestone and Chert, shales and Fell-Top Limestone, shales, ganister, Tan Hill Coal, shales, Ingleborough Grit. This last is taken as the basement bed of the Millstone Grit. (The foregoing was given in Woodward's Geology of England and Wales, 2nd Ed., p. 164, 1887).

The outcrops of these various subdivisions can be traced along both sides of the dales, in some cases for distances of three miles, without interruption. The terrace-like outcrop of the limestones—each ending outwards in a cliff-like scar, and bounded on its inner edge by lines of swallow-holes—could be distinctly seen by the party as they climbed the hill.

On the way several of the party obtained some of the commoner fossils of the Yoredale limestones, which were chiefly brachiopods.

At Oxnop (or Ousnop) Beck Head the party spent some time in examining the road-side sections of the Main Chert and Black Beds. These were seen to be silicious (not *arenaceous*) limestones, in which silica in a colloid form had been an original constituent of the rock. It is chiefly of organic origin, consisting largely of sponge specules. Locally it passes into beds of nearly pure chert, and graduates horizontally, in other directions, into limestones of the ordinary type, thickening considerably as it does so. 'One is tempted to regard these siliceous beds as representing a palæozoic series of deposits of siliceous mud, derived, it may be. from the exuviæ of the diatoms, radiolarians, and sponges inhabiting the deep sea at that remote period. Prof. Huxley (Contemp. Review) has shown how deposits of this nature may, by the partial—or the total—dissolution. and the subsequent redeposition of their siliceous particles, be converted into amorphous opaline silica. Such deposits as have lately been brought under the notice of the scientific world as one of the results of the *Challenger* Expedition, would give rise to a set of rocks essentially like those above referred to, if there were frequent oscillations of level bringing about alternate deposits of siliceous mud and calcareous ooze' (see J. G. Goodchild, Trans. Cumb. and Westm. Assoc., Part vii, p. 125, May 1882). This view has since been confirmed by Dr. Hinde (Q.J.G.S.).

A remarkable plexus of faults occurs in Ousnop Beck, and the geological structure of that part is further complicated by other disturbances of the strata. The broader features of these were briefly described en route. The outcrop of the Main Limestone attracted much attention, as it forms a fine bold precipice on the east bank of the stream. In this scar Ravens (*Corvus corax*) bred up to within the last few years, and, doubtless, would do so still if they were left unmolested.

Several of the party were much interested in some curious specimen of (Main) Limestone which had been irregularly corroded by the action of surface waters, and subsequently glazed by a thin film of transparent calcite, redeposited from solution, during the drier part of the summer months.

At Spout Gill attention was directed to such of the broader features of Swaledale geology visible from that point. The general course of the 'Stockdale Vein,' a great fault ranging past the north side of Thwaite, Muker, Gunnerside, etc., was pointed out. The Askrigg and Muker Limestone lay at the bottom of the dale before the party, but the northern downthrow of the Stockdale Vein has let down much higher strata against the rocks named.

From Spout Gill onward to Muker the attention of the party was chiefly devoted to botanical pursuits, several additions to the published lists being made on the way.

On the second day a contingent of the party gathered at Muker, and left for Keld by way of the east side of Kisdon. Soon after crossing the Stockdale Vein the outcrop of the rocks on the east bank of the Swale could be easily made out, and the general succession was briefly described. The rocks best exhibited were the Undersett and the Main Limestones. Attention was directed to the smooth and rounded-off contour of the hill, especially to the north-east of Muker. This is due to the fact that the prevailing direction of movement of the ice during the Glacial Period had been oblique to the outcrop of the strata; where it long coincided with the outcrop, terraces of the more resistant strata resulted. Several small faults and mineral veins could easily be made out in the scars below Ivelet Moor, and the study of these gave rise to considerable discussion as to the origin of metalliferous veins in general. Mr. Goodchild regarded these as having received their present contents by deposition from thermal water rising through pre-existing fissures (faults, etc.) at a time when the rocks were undergoing their last principal upheaval, in Miocene times (J. G. Goodchild, 'Cumberland and Westmorland Minerals,' Trans. Cumb. and Westmld. Assoc., vii, pp. 107-110 (1882), and 'Genesis of Metalliferous Deposits,' Proc. Geol. Assoc., xi, No. 2, p. 49 et seq.).

Above Hartlakes the party obtained a good general view of the lead-mines of Swinner Gill, as well as those of Beldi Hill. These are situated upon the westerly continuation of the E. and N.E. veins so long worked in the Old Gang Mines. They are here much disrupted and deranged by faults, whose general direction is north-westerly. These are the *older* set, and have 'trailed' the later formed easterly faults ('Notes on Faults,' J. G. Goodchild, Trans. Edin. Geol. Soc., 1889, pp. 71-74). Their broader features were described as far as was necessary for general purposes.

On the south side of Kisdon Lower Foss (in Wensleydale a waterfall is called a 'Fors,' in Swaledale 'Foss': it is interesting to find both Scandinavian names), which is caused by the superposition of the (harder) Undersett Limestone upon the (softer) shale and sandstone at its base, the contingent from Keld and Thwaite was met. Then, after a pleasant ramble together amongst the beautifully-wooded crags below Birkhill, a move was made in the direction of Kisdon. Arrived at the north end of that hill the party had an opportunity of studying all the broader geological features of that supremely beautiful part of Swaledale. The effect of the numerous

faults and other disturbances in contributing to the varied nature of the scenery was described in some detail, and was further illustrated by many diagrams. Mr. Goodchild indicated the point where Kisdon Foss had started at the close of the Glacial Period, and showed that it had since cut back from that starting point a distance of more than half-a-mile. The starting point of the Upper Kisdon Foss (Undersett Chert on shale above Undersett Limestone) could easily be made out also. The conjoined gorges left by the recession of the two fosses constitute an important element in the scenery here. Some remarks were made upon the recession of the fosses higher up the Swale—Catrake Foss, Hoggart's Loup, Currack Foss, Rainby Foss, &c.—and it was shown that the scars left on both banks of the river, by the recession of each of the fosses in question, could be distinctly traced back to their post-glacial starting-point. Some observations upon the same features will be found in the 'Geol. Mag.,' 1875, pp. 325-6, where an attempt has been made to estimate the extent of post-glacial erosion by means of these fosses, dealing more especially with the waterfalls of Wensleydale.

From Birkhill the party descended to a point opposite the foot of White Wallit Scar, where Mr. Abraham Lambert, of Harrogate, took a photograph of the group of naturalists. Then a move was made towards Keld, where the various objects of interest in the scenery were inspected and much admired. These were the gorge formed by the Undersett Limestone and its underlying sandstone, extending eastward from Catrake Foss and Morell Hole; Clap Stye Well, where a perennial spring of the brightest of water flows from the base of the Undersett Limestone; the Sandbed, above: the Sandstone Foss of Hoggart's Loup; Rainby Foss, &c. All the riverside scenery here was bright with the blossoms of *Epilobium angustifolium*, *Geranium pratense* and *G. sylvaticum*, *Campanula latifolia*, *Spiræa*, etc., and the ferns were at their best. Then past Cotterby Scar (Main Limestone) with the Undersett Chert at its foot, to Keldside Mines, where the Main Chert and Black Beds are let down into the Swale by faults. Here some time was spent in examining these remarkable siliceous beds. Then a return move was made to Keld, where the whole party gathered to a very pleasant dinner at the Cat-hole Inn.

On the day following, at the conclusion of the meeting held at Muker, most of the naturalists started for Hawes by way of the Buttertubs. On the way Mr. Goodchild pointed out the chief features of the geology, indicating the outcrop of each of the chief Yoredale limestones, which were, of course, seen in the same order as on the first day's excursion. On the way up Mr. Goodchild made

some observations upon the plain of the fell tops, as seen from the high ground, and gave his reasons for regarding it as the modified descendant of the old surface on which the New Red Rocks (= Magnesian Limestone and Trias) formerly reposed. Its present upheaval and part of its present inclination date from Oligocene or Miocene times, and are coeval with the close of the volcanic period of the Antrim and Western Island Basalts, and with the filling of the metalliferous veins.

Arrived at the Buttertubs the naturalists made a long halt for the purpose of examining these singularly beautiful natural features. Several persons made the descent to near the bottom of one or two of the shafts. The Buttertubs commence at the very top of the Main Limestone, where the insoluble Main Chert comes on, and are continued downward to the very base, where the insoluble sandstone below the soluble limestone comes on. Water sinks in from the surface, dissolving the limestone right and left of each joint as it proceeds, works its way down through the newly-formed channel, until it reaches an impervious stratum beneath, where it issues as copious springs, heavily charged with calcareous matter in solution. As the rock wastes, the places where the water enters the limestone recede radially from the starting-point, so that the limestone is eaten away to every point of the compass, provided the water enters on all sides. Of course, the limestone ceases to be fretted away along any direction where the water ceases to flow. Some good examples of rotten-stone, resulting from the removal of the calcareous constituents of the Main Chert, were examined. Specimens of the more interesting of these are placed in the Edinburgh Museum of Science and Art.

On leaving the Buttertubs, the general features of the beds forming the fell-tops were described. Liunasit (misspelt Lovely Seat by Phillips and others since) consists of the three lower subdivisions of the Kinder Scout Grit, which retain their several characteristics over a very large area in this part.

Nearer Wensleydale the chief fell-tops visible on the way were named and their geological composition briefly referred to. When the party were sufficiently near to Wensleydale to see the broader features of the dale itself, Mr. Goodchild gave some account of the origin of the remarkable scars and terraces of limestone seen there. He showed that their present form does not admit of explanation by ordinary subaërial denudation, while it is exactly of the nature that would result from prolonged glacial action. The subject is more fully dealt with in the Quart. Journ. Geol. Soc. for Feb. 1875 (read in June 1874), pp. 71 et seq.; Geol. Mag., Dec. ii, vol. 1 and 2; and Trans. Cumb. and West. Assoc., No. xi (1887), pp. 155 et seq.

At Simonstone most of the naturalists deviated from the Hawes road to examine Hardra Fors; and thus terminated the very pleasant excursion to Swaledale.—W.D.R.

NOTES—CLIMATOLOGY.

Ferns in the Frost.—I have been a grower of ferns for 30 years, and never knew our out-of-door native species suffer as much as they did in the frost at the end of May this year. One plant, *Lastrea rigida*, was completely demoralised, hung its fronds, and its unrolled croziers drooped to the ground. Even *Lastrea dilatata* suffered much. Both these ferns were in northern aspects, and both are hardy ferns found in sub-alpine districts, the last a most common fern. *Lastrea rigida*, whose home is Ingleborough, one would think had got acclimatised, and heedless of cold weather.—JOHN EMMET, Boston Spa, June 1st, 1891.

[It is, fortunately, not often that this country experiences such severe frosts as the one named, in the latter end of May; hence it is equally seldom that our out-of-door native ferns are called upon to submit to such unusual terms. The usual periods for frost occur *before* the ferns have either grown their fronds or even thrown up their 'croziers.' It is quite certain that with a temperature several degrees below freezing point at the end of May, *all* young vegetation must, and did suffer.—EDS. NAT.]

Unseasonable Weather in Mid-May (Staveley near Boroughbridge).—Whit-Sunday, May 17th, 1891, will be long remembered in Central Yorkshire for its unreasonable weather. On the two preceding days there had been hailstones, a few flakes of snow had also fallen; but these hardly prepared one for what was to follow. Whilst experiencing the heat of the previous Monday, Tuesday, and Wednesday, when the thermometer ranged between 70° and 80° in the shade, it would have been difficult to believe that in four short days the face of the country would be wrapped in a veil of snow. Yet so it came to pass. Early on Whit-Sunday afternoon snow began to fall, and in a couple of hours it covered the ground to the depth of three inches. 'Winter lingering chills the lap of May,' sang the poet long ago of another land, but here in our own land in the 'merry month of May' was the same untoward visitor lingering.

During the progress of the storm one was struck with many anomalies caused by the unseasonable weather. Pastures, which but now delighted the eye with the brightness of their vernal hues, became draped in purest white. One heard the Willow Wren singing in the snow-clad larch, and noted the Swallows flying among the falling flakes, while Starlings and Blackbirds, as they passed to and fro feeding their young, appeared bewildered. One saw, too, the bright green of the mountain-ash heavily coated with snow, the delicate young foliage of the birch becoming gradually white, the thorn trees, which in some seasons would have been laden with a cataract of blossom, now bending under the snows of winter; bright-hued pansies, yellow-bloomed allisum and rock white, being gradually buried beneath the all-spreading shroud, whilst from out the mantle of snow which concealed its foliage, peeped the pink blossom of the apple. Truly these were incongruous sights, but more sad scenes were destined to meet the eye on the morrow. The twelve degrees of frost which followed in the night filled up 'the measure of our grief,' and completed 'the winter of our discontent.'

Writing a month after the event, the damage caused by the storm has become apparent. It is sad to mark the havoc which has been wrought among the fruit and garden crops, and to see the blighted foliage—brown as in autumn—of the beech. A portion of the foliage of the horse-chesnut and the larch appears as if scorched by a sudden blast. The oak is but now timidly putting forth its leaves. Here and there an ash shows signs of life, the lateral buds breaking forth to replace the destroyed terminals. The walnut trees, standing up among the summer foliage of the sycamore and hornbeam, still as bare and gaunt as when held in the grip of winter, lend a weird look to the landscape. In the hedgerow the privet and bramble have suffered, and the flower-buds of the roan-tree, laburnum, and sycamore have fallen unopened.—E. P. KNUBLEY, Staveley Rectory, Leeds, 17th June, 1891.

BIRD-NOTES FROM NORTH LINCOLNSHIRE, MARCH, APRIL, MAY, 1891.

JOHN CORDEAUX, M.B.O.U.,
Great Cotes, Ulceby, Lincolnshire.

Plectrophanes nivalis. Snow Bunting. March 12th. Last seen, a considerabe lflock, amongst them being many very white-plumaged birds.

Querquedula crecca. Teal. I was shown a cock Teal, shot in February, and since set up, in which the black on the throat was much more pronounced and extended than is usual, as is the case also with some Wigeon.

Fuligula ferina. Pochard. March 19th. On Croxby Lake on the North Wolds to-day were ten common Pochard, and of these six were adult males, and four immature males and one female Scaup swimming amongst them.

Motacilla alba. White Wagtail. April 1st. Saw one early this morning on the lawn, also a pair of Pied Wagtails.

Charadrius pluvialis. Golden Plover. April 11th. Large flocks in summer plumage up to this date in the marshes; one flock numbered between three and four hundred; none seen after this.

Corvus cornix. Grey Crow. April 11th to 13th. Up to this time seen daily in very considerable numbers; they left the district to a bird between these dates. Wind northerly, light.

Regulus cristatus. Golden-crested Wren. April 11th. Several seen near the coast on the spring migration.

Hirundo rustica. Swallow. April 12th, first seen, many on April 17th, and again on May 4th.

Cuculus canorus. Cuckoo. April 28th. Wind south, many heard calling at early morning.

Tringa canutus. Knot. April 28th. Flock of one to two hundred, chiefly grey birds; some slightly suffused with red underneath, and one in full summer plumage with bright chestnut under-parts. Other flocks, in a more advanced stage of change to summer plumage, were seen by me during the month on the Humber muds, and some very handsome birds on the 30th; last seen on May 5th.

Saxicola œnanthe. Wheatear. May 4th. There was a very large arrival of small migrants on this date, the hedges and fields

swarming with them. Those chiefly observed were Wheatears, Whinchats, Whitethroats, Willow Wrens, and Yellow Wagtails; also Swallows and Martins.

Numenius phæopus. Whimbrel. May 5th, first seen—much below the average number during the month.

Eudromias morinellus. Dotterel. May 10th. A trip of about two hundred of these handsome spring visitors on the 'fitties' in Stallinbrough parish, on the evening of the 10th, wind north, and heavy rain for twenty-four hours: on the following morning they had collected in a marsh pasture adjoining the Humber embankment, a place where Dotterel appear every year in May. My informant, a shepherd, who is very well acquainted with these birds, and has often in other years given me information as to their whereabouts, says they were very tame, and that he rode his horse amongst them. He had never seen so many before at once, and that there were fully two hundred, if not more. He had seen from twenty-five to thirty, but more frequently small 'trips' from ten to twenty.

Scolopax rusticola. Woodcock. The young were hatched off early in May in a locality in North Lincolnshire, where many breed each year. About thirty couples nested in 1890 in a comparatively circumscribed area, where they are most strictly preserved and looked after. These, both old and young, are supposed to have left the district early in October.

Cypselus apus. Swift. May 15th, first seen; also the Lesser Whitethroat (*Sylvia curruca*).

Sylvia salicaria. Garden Warbler. May 20th, first heard singing.

Squatarola helvetica. Grey Plover. May 23rd. Some in complete summer plumage on the coast; have been fairly numerous throughout the month.

Limosa lapponica. Bar-tailed Godwit. May 23rd, last seen—nine very fine birds in red plumage on the coast. These were eagerly boring in the ooze and extracting sandworms.

Totanus calidris. Redshank. May 23rd. Several pairs seen in a wild natural spot which they appear to have quite recently adopted as nesting quarters. I watched them for some time wheeling and drifting to and fro with drooping wings, all the time uttering a call quite distinct from their ordinary alarm note. Frequently they flew up quite close, their complaining, monotonous plaint never ceasing for a moment.

SOME NOTES ON THE WHITE WAGTAIL.

Rev. H. A. MACPHERSON, M.A., M.B.O.U., Etc.,
Author of the 'Visitation of Pallas's Sand-Grouse to Scotland,' etc.

My friend Mr. F. B. Whitlock has asked me to supplement his notes on the White Wagtail (*Motacilla alba*), and I gladly accede to his request. My experience, however, of the species in England relates solely to observations upon migratory birds in April and September; except, indeed that I have seen the species apparently interbreeding with the common Pied Wagtail. As Mr. Seebohm pointed out some years ago, this species can at all times be distinguished by its grey upper tail coverts; but I did not shoot the bird that was apparently paired to a Pied Wagtail. We, in the North-West of England, consider the White Wagtail a scarce spring visitant, observed on migration almost every year, generally alone or in company with other individuals of its own species. The stay of such birds is generally limited to a few days. My predecessor, the late Mr. T. C. Heysham, was perhaps the first man to detect the species in Cumberland, in the month of April 1842; and he met with a second specimen in April 1848. I am not aware that he met with the species in autumn, and though large numbers of Pied Wagtails appear at that season on the Solway, I have only once observed the White Wagtail at that season in Cumberland, though I possess the skin of a second autumn-killed bird, shot by the late Blackett Greenwell.

Mr. Whitlock quotes a remark of mine that it has always appeared to me that the call-note of the White Wagtail 'is softer and less incisive than that of the Pied Wagtail.' To this I still adhere; and though my ear may be less correct than that of some of my friends, I have really no misgiving as to the difference between the call-notes of the two species.

The White Wagtail has occurred to me in Norway, and in different parts of France, in Holland, in Spain and Germany. Its nesting habits are very similar to, if not indeed identical with, those of the Pied Wagtail. One pair that I noticed daily a few weeks ago, had apparently a nest in the wall of a village church. The male bird was pugnacious in driving away other small birds from the immediate vicinity. In Germany I found nests in holes in walls, in roots of trees, and one on a shelf in a tool-house. I never happened to find a nest in Switzerland, but we observed young birds being fed by their parents as late as the month of September, and these no doubt were a second brood.

July 1891.

I should say that White Wagtails as a rule associate very little with other species, but I once saw a family party in company with a Wryneck. Perhaps the latter was an uninvited guest; at any rate, he was very busily engaged in catching ants, and the group of old and young Wagtails gracefully posed around him made up a very pretty little picture. That occurred early in July, in the neighbourhood of the Upper Rhine. There, as elsewhere in Central Europe, the White Wagtail was a common bird, and often enlivened the country roads with its cheery presence. It may be fancy, but it has sometimes struck me, that the White Wagtail subsists upon flies to a much greater extent than the Pied Wagtail; and perhaps it is also more partial to perching on buildings than our common bird. I do not remember, either, having seen the Pied Wagtail feeding on the refuse of farm-yards, which often attracts the White Wagtail to search for insects. The continental bird always seems to me to be the daintier species, less robust perhaps than our home bird, a trifle slighter in make, and more graceful in carriage. But the two species are so closely related that it is really unsafe to discriminate too nicely between their relative characteristics. Nor should it be forgotten that the habits of most birds are modified by circumstances. I have never yet met with the Pied Wagtail upon the Continent. Had I done so, it would have been easier to compare the habits of the two species with absolute certainty. But the Pied Wagtail has, of course, a much less extensive range on the Continent than the White Wagtail, which one meets with almost everywhere in the plains and valleys, and up to at least 5,000 ft. in the mountains, though the Grey Wagtail to a considerable extent replaces the White species on the rivers of elevated districts, as in the Puy de Dôme country.

NOTES AND NOTES.

The paper on 'Some Physical Properties of Coal,' which our friend Mr. Benj. Holgate, F.G.S., of Leeds, read in abstract at the Leeds meeting of the British Association, has now been printed in the Proceedings of the Yorkshire Geological and Polytechnic Society for 1890, from which a reprint lies before us.

The British Post Office has at last given way on a matter which affects the dispatch of small parcels of scientific specimens abroad. At the May meeting of the Entomological Society of London was read a letter which Lord Walsingham had received from Sir Arthur Blackwood, the Secretary of the Post Office, in answer to a memorial which had been submitted to the Postmaster-General, asking that small parcels of the kind mentioned might be sent to places abroad at the reduced rates of postage applicable to packets of bonâ-fide trade patterns and samples. The letter intimated that, so far as the English Post Office was concerned, scientific specimens sent by sample post to places abroad would not be stopped in future.

NOTES AND NEWS.

In the Mineralogical Magazine, No. 43, is a brief note, with figure, on 'Twins of Marcasite in regular disposition upon Cubes of Pyrites,' by Dr. C. O. Trechmann, F.G.S., of Hartlepool.

England and Sweden still retain the pre-eminence as to priority of institution of phænological observations, which were first made by Linnæus at Upsala in 1748, by Stillingfleet at Stratton in 1755. So it appears from a reprint we have received from Dr. Egon Ihne of Friedberg, entitled 'Die ältesten pflanzenphänologischen Beobachtungen in Deutschland' (28 Bericht d. Oberhess. Ges. f. Nat.- und Keil. zu Giessen), in which he establishes the right of Gottfried Reyger to be regarded as the pioneer of phænological observers in Germany, his observations made at Danzig dating back to 1767, the next earliest being those of von Schmöger in 1774 at Regensburg, and of Eisenlohr in 1779 at Carlsruhe.

Mr. Tuffen West, F.L.S., F.R.M.S., who was so well known as a natural history and microscopical draughtsman, died on the 19th of March, at his residence, Furnell House, Frensham, in the 68th year of his age. He was a native of Leeds, where he was born in 1823. He early evinced a taste for science, which first manifested itself in an osteological direction, and by the time he was fifteen years old he had set up at least a hundred complete skeletons of various creatures. He was brought up to the medical profession, but in later life devoted himself to microscopy and natural history. He was of the Society of Friends, and appreciative notices of him are to be found in the Natural History Journal (York) and in the International Journal of Microscopy (Bath) for May.

The first printed report of the Manchester Museum has just been issued. It includes, by way of introduction, a brief history of the Museum, and an account of the various collections which go to form its nucleus in addition to what remains of the collections formerly in the hands of the Manchester Natural History Society. This is followed by the Report of the Keeper of the Museum (Mr. W. E. Hoyle, M.A., F.R.S.E.), for the Session 1889-90, showing a large amount of work accomplished by himself and his various assistants, viz., Messrs. J. Ray Hardy, F. G. Pearcey, and Herbert Bolton, Assistant Keepers, and Messrs. Thos. Hick, B.A., B.Sc., R. Assheton, B.A., and Bernard Hobson, M.Sc., the Lecturers in Botany, Zoology, and Geology respectively at the Owens College, under the control of which institution the Museum is. Manchester is to be congratulated upon having so efficient a staff of active workers in connection with its Museum.

The Rev. E. Maule Cole sends us an interesting note on Bird-talk. He remarks that the power of imitation is very great in some birds. No respectable Parrot would think of holding its tongue after attaining its majority, say, at the age of two. Therefore, much depends on the atmosphere of its surroundings. Parrots have been known to scold, and to use very bad language, having only too faithfully represented the sounds which reached their observant ears. But as a rule they are taught to speak more or less politely, and it is a marvel how, with perhaps a dozen phrases at command, they often use the right one at the right moment, as if endowed with some degree of intelligence. Certainly they possess an association of ideas, for the other day Mr. Cole was imitating the miew of a cat, when the Parrot called out 'Puss, Puss.' Many will remember the amusing story of how a young man was making love to a housemaid, when a parrot, unseen, called out in a shrill voice, 'Who kissed the cook.' The indignant maiden discharged her lover on the spot. Starlings, too, have been trained to speak. One in the West Riding used to say 'a pint,' 'I shan't pay,' 'twenty pound for Tommy.' Bullfinches, Robins, and Linnets have been known to whistle popular airs with perfection. But a Sparrow! Who ever heard a Sparrow talk? Well, Mr. Cole has. He was visiting at a house near York this year when he was astonished by hearing a Sparrow call out, with clear and ringing tones, 'Tommy, Tommy, kiss me, kiss me.' 'Tommy, kiss me, kiss me, kiss me, kiss me.' The efforts of this clever little bird seem not unworthy of notice in the 'Naturalist.'

NOTES—ORNITHOLOGY.

Two Cuckoo's Eggs in one nest.—A case of the above has occurred near Louth this year. The nest, that of a Pied Wagtail (*Motacilla lugubris*), was in a chalk-pit, and was found by me to contain, on June 18th, two Cuckoo (*Cuculus canorus*)'s eggs only, of which I took one. On June 22nd I again visited the nest, and found it deserted, containing only the egg I had left. — E. LARDER, 33, Mercer Row, Louth, June 23rd, 1891.

Hooded Crow on Board Ship.—On June 2nd, when the Orlando s.s. (Gothenburg to Hull) was off the coast of Denmark, a Hooded Crow (*Corvus cornix*) came on board. Finding it was too far for him to make to land again, he remained quite contentedly on the ship till our arrival off the Humber on June 4th. Occasionally, when either passenger or sailor approached him too curiously, he would take a short flight round the vessel, otherwise he did not appear to be at all embarrassed at his somewhat peculiar position.—E. T. BALDWIN, London, S.W., June 22nd, 1891.

Turtle Dove near Robin Hood's Bay.—Although the Turtle Dove (*Turtur communis*) cannot be considered a rare visitor to East Yorkshire, it is sufficiently uncommon to make it advisable that all occurrences should be recorded. Walking from Cloughton to Robin Hood's Bay on the 13th inst., I called on Mr. William Lickley, the station-master at Peak, who is an amateur taxidermist. He told me that he had a strange bird which had been shot at Peak a few days previously. I went with him to his house, and found the bird to be a Turtle Dove. It was obtained under the following circumstances:—On the 2nd inst. Mr. William Hodgson, a farmer at Peak, went out with his gun to shoot a pigeon. Passing by a small fir plantation he saw what he took to be two young pigeons, one of which he shot; the other flew away. Seeing that he had obtained a strange bird he took it to Mr. Lickley, who mounted it, and it was still in the wrappings when I saw it. It seems a pity that the bird was shot, as there were apparently a pair of them, and they might have bred, or perhaps were breeding, in the neighbourhood.

Since writing the foregoing I have received a letter from Mr. Lickley, who writes:—'I have been informed by another farmer in this locality that he has seen the Turtle Dove up here three times during the last few years, at rare intervals, but has never obtained one.'—EDGAR R. WAITE, The Museum, Leeds, June 18th, 1891.

Birds and Snow in May (Goathland).—Whilst on the moors near Goathland on the 17th ult., in company with Mr. E. G. Potter of this city, we noticed the strange evolutions of the Lapwings (*Vanellus vulgaris*) referred to by Mr. E. R. Waite as having been noticed by him on the same day near Harrogate during the memorable snowstorm, viz., flying restlessly about, and at last ascending to such a height that they became lost to the view, but long after their wild and plaintive cries were plainly audible apparently from a great height. The Grouse (*Lagopus scoticus*) too, seemed very uneasy, and were constantly getting on the wing, and then, after a short flight, settling down again. I noticed they always uttered their peculiarly harsh cry on rising, and frequently, but not always, on settling down. I may just add that our point of vantage was the shelter afforded by the thick foliage of a fine Holly tree, situate in a small wood rising up from the stream side, and which commanded a splendid view of the moor stretching away for miles; and that the other birds of interest seen during the day were the Curlew (*Numenius arquata*), Lapwing (*Vanellus vulgaris*), Golden Plover (*Charadrius pluvialis*), Snipe (*Gallinago cœlestis*), Sandpiper (*Tringoïdes hypoleucos*), and Ring Ouzel (*Turdus torquatus*), and all these were breeding. At the commencement of the snowstorm, and just after, we repeatedly heard the melodious call of the Cuckoo (*Cuculus canorus*), truly out of place at such a time, and saw numerous birds; one which I examined had two of the wing feathers of each wing marked just like those of the Kestrel. The bird was a male, and had been shot owing to its destroyer having mistaken it for a Hawk. An autopsy which I afterwards held upon the defunct revealed the fact that the bird had been eating the larvæ of some hairy species, probably *Arctia fuliginosa* or *Chelonia plantaginis*. The eggs of the Merlin (*Falco æsalon*) are taken annually, and my informant told me that he obtained a high price for them.—WILLIAM HEWETT, 12, Howard Street. Fulford Road, York, June 14th, 1891.

Naturalist,

SOME WORD-PICTURES TAKEN FROM NATURE.

Rev. W. C. HEY, M.A.,

Vicar of St. Olave's, York; President of the Conchological Section of the Yorkshire Naturalists' Union; and Vice-President of the Yorkshire Philosophical Society.

Descriptions of natural scenery, whether in prose or poetry, have nearly always disappointed me. They are not, as a rule, perfectly accurate, and are consequently unsatisfactory to a close observer. The explanation of this is simple—they have been written from memory. They are the records of *impressions*, not *observations*. These short word-pictures have just this one merit—they were taken out of doors and on the spot; they are verbal photographs.

April 26th, 1890. In Saltburn Glen.

Above, the north-west wind sweeps fiercely over the fields, but down here in the deep glen, it scarcely waves the slender wood-anemones, nor stirs the ivy that clings to the alders. All the steep bank before me is a pale green mist—young leaves of hawthorn and willow and honeysuckle. Near at hand the ground is covered with dog-mercury, with here and there a tuft of the great drooping wood-sedge or a pale pink spike of water colt's-foot. Behind me, a low swamp is all on fire with the broad golden blossoms of Caltha—suns that almost shame the soft moonshine of the coy primroses which nestle among the dead leaves and dry stalks of last year. Here and there a blue eye of the wood forget-me-not peeps forth, only beginning to open; but up above, through the branches of the flowering ashes and the still sleeping oaks, the whin is in all its full glory, and its peculiar scent comes sifting now and again along the air. That graceful grass, *Melica uniflora*, has shot up its green spears through the fingered anemone leaves, but the panicle scarcely appears. *Adoxa*, shiest of all shy flowers, reveals its inconspicuous crown of flowers where the shelter is closest, and on a damp and shady bank, spreads a reach of golden Saxifrage. The alder tree on which I sit and write has fallen across the noisy stream: its trunk is held in a perfect network of ivy branches, and on this the silver-grey lichens have laid their intricate lacework. Near the root a few fronds of Polypody have found a precarious home.

Sep. 20th, 1890. Danes' Dyke (North End).

I am lying by a stile under shelter of the great grassy end of Danes' Dyke, a fresh south-east breeze blowing, a warm and sunny wind, putting a thousand little snowy crests upon the ripples of

a brilliant satiny green-blue sea, with great purple patches on its surface. The horizon ends vaporously. A few white clouds of very irregular shapes float in a pale blue sky. Now and again I hear the sea-gulls cry, and a few birds appear above the cliff, with snowy breasts and dark wings. By me the thistles shake silvery plumes against the sea; dried stems of Holcus tremble in the wind; flies settle upon them with great brown eyes; hundreds of little gnats flit in the sunshine; now and again the buzz of larger insects goes by. Behind me is a sheep pasture, a faded field with dark masses of gorse. The sheep are feeding so busily that they are silent, but the waves below are clamorous, a seething, and a perpetual roaring beneath the seething, both continuous and unvarying at this height.

May 24th, 1890. In Sheriff Hutton Park.

I am sitting on a swinging oak branch—one of those great old trees which are considered to be relics of the Forest of Galtres. It is a day of pale blue sky, and hot sunshine, with a strong north-east wind fresh and cool, rushing through the young leaves. The oaks are in their tenderest foliage, which, in to-day's strong light, is more gold than green. The shadows of the leaves still twinkle *individually* on the grass. At hand are some horse-chestnuts in bloom. They have quite a glaucous effect against the oaks. The castle jackdaws are chattering. Piles and piles of may crowd the hedges; I never saw it so profuse, and its idle scent fills the air. The view over the great vale of York is full of refreshment—unbroken, save by the dimly-seen towers of the Minster. Once these quiet fields saw other scenes, for the great pasture through which I have just walked is full of entrenchments from end to end. To-day I saw no living thing in it but a swarm of turquoise-bodied dragon-flies (*Agrions*) darting about a marshy spot where *Ranunculus sceleratus* was spreading its glossy leaves.

Nov. 4th, 1890. At Redcar.

I have walked from Redcar by sand-hills and sands, and climbed up a steep sandy bank, crowned with the glaucous tufts of Ammophila. All along the red boulder clay beneath the sand-hills has been washed clean by a stormy tide, and here and there great boulders appear, inscribed with their history, just as experiences leave a mark on human character. A soft west wind blows very, very feebly; the sea is low, but the tides are neap. Near me the colour is a very pale pearly blue. Long regular waves are breaking, the foam very white in the low sunshine; for though it is but two o'clock, the faint shadow of the cliff reaches far out on the level sands. Where a stream has broken through the cliff, the sunlight

falls in a long shaft on the shore. Not far off rises the little gray church, in whose yard is the unmarked grave of Cook's father. The sands are lonely—only a distant figure on either hand—very uniform too; a thin broken line of sea-coal and a few blackened stalks of Laminaria mark high-water line. I have gathered a handful of late poppies in a field near. Their full bright scarlet looks strange amid these pallid November tints, as sometimes the sun sets crimson when the earth is wrapt in winter snows. For all the bright tiny flowers that deck these sandy hollows in such numbers—purple astragalus, pink thyme, and yellow lotus—are over. Only a few blooms of the white variety of the storksbill linger on in nooks that catch the sun's full warmth.

MAY 4TH, 1891. AYTON.

My feelings in leaving the plain for this breezy hill may be compared to those of a fly which has just crawled up the side of a milk jug into which it had fallen, and now stands drying its wings on the rim. On my way up, I passed a quantity of green hellebore, flourishing under the shelter of an old stone wall. The bright green flowers contrast beautifully with the young leaves, which are at present of a deep vinous purple tint, reminding one of Sophocles' *οἰνῶπα κισσόν*. The view from this hill, inconsiderable as it is, is quite surprising. Immediately at my left opens the mouth of Forge Valley. Close to the river are groups of alder, wearing a very red tinge just before the opening of the leaf. Higher up, a few larches shine out, dressed in their spring emerald. Beyond extend the brown reaches of Seamer Moor, crowned with its round beacon tower. Before me stretches the long vale of Pickering, where the white smoke of many trains rising above plantations of dark pines marks the route of the railway line. For some little distance the course of the Derwent may be distinguished by the tall stiff alders that line its banks—that curious devious river which seems to have shrunk from the embrace of Neptune just when he was prepared to receive her. I suppose the real explanation of the Derwent's inland flight is the massing of a great ice-barrier near Filey, damming up the water and so forcing the river to break itself a way through the Howardian Hills. Above the vale rises the long swelling range of the wolds, ribbed here and there, like a giant carcase, with many white roads. At their base many villages are visible, venerable from their antiquity. I can never look at these chalk hills without a vision of those ancient peoples that lived and laboured, hunted and fought, and at last died and were buried upon them—whose arrows and axes the farmer's plough and the drainer's spade turn up in such numbers,

whose quiet grassy graves unscrupulous science rummages to fill an antiquary's cabinet or stock a provincial museum. There is no more pathetic picture in the universe than man's early struggle with nature—the slow-developing triumph of brain-force over brute-force That it is no very long time since wild animals constituted a danger to human life, I am reminded by the sight of Flixton Wold just opposite me, where once stood a refuge for the escape of travellers pursued by wolves.

Beyond the last soft swell of the hill, the giant cliffs of Speeton rise, a ghostly line of precipices. The sun will fall upon them in the evening, and then they will shine forth bright and clear; now in shade, they appear strangely dim and mysterious, almost unsubstantial, and as if they might melt away like a cloud; not like the barrier that even resisted the onward march of the great glacier of the North Sea, and turned its course aside till it met with the lower ground of Flamborough Head. The hard stern realities of life sometimes conceal their true character as effectually as these massive cliffs, and then surprise us by all at once revealing their inflexible rigidity. Almost at my feet rises a crumbling ruin, as eloquent of human perishableness as yonder cliffs of Nature's endurance. A fragment, I understand, this old building is of the Ever's family mansion; its former extent is proved by masses of ruin and the foundations of walls, now mantled by the thick turf. An elder-tree has rooted deeply in the stone-work of a narrow window. And while its fibres are loosening the mortar and preparing the stones for their fall, its spreading branches seem to proclaim and predict Nature's triumph over this old relic of human greatness.

NOTE—BOTANY.

Swaledale Plants.—For reasons [serious illness] given in my report of the Swaledale excursion, I have been unable to reply sooner to the very courteous criticisms on my plant-list by Mr. Whitwell, which appeared in 'The Naturalist' for Oct. 1890, p. 305. An equally courteous letter to almost exactly the same effect was sent me by Mr. J. Gilbert Baker a short time before the appearance of Mr. Whitwell's letter referred to. All I can say in reply is that nearly the whole of my energies for several years were devoted to the working-out of the many very difficult geological problems with which it was my official duty to deal in the Swaledale and adjoining areas. Plant collecting was a mere recreation, and I have never taken it up seriously, either then or since. For this reason it is more than likely that my critics are right and I am wrong as regards some of the species called in question. But with all deference to the opinion of such competent authorities, I still cherish the belief that I correctly identified and recorded the remainder. Mr. Whitwell's letter will do good by showing others what to look for, and also how to criticise when occasion for criticism arises.—J. G. Goodchild, Edinburgh, June 6th, 1891.

YORKSHIRE NATURALISTS' UNION.

29th ANNUAL REPORT, for 1890.

The Executive, in presenting the 29th Annual Report and Statement of Accounts, have to congratulate the members upon a year of steady and continued progress and of satisfactory work, whether as regards the value of the Union's publications, the interest maintained in its excursions, or the amount of work done by the various Committees appointed for special research.

The Meetings which have been held during the year have been five in number, one for each division of the county, the places and dates having been as follows:—

May 26th, Whit-Monday, Driffield for Lowthorpe.
June 14th, Saturday, Dewsbury for Bretton Park.
July 8th, Tuesday, Kildale-in-Cleveland.
Aug. 2nd to 4th, Saturday to Bank Holiday Monday, Upper Swaledale (Gunnerside, Kisdon, and Keld).
Sept. 11th, Thursday, Malham and Gordale (in connection with the meeting of the British Association in Leeds).

For each of these meetings the usual descriptive circular, which is so conducive to the convenience of members and associates undertaking the day's explorations, was issued, and at all the meetings good results were achieved.

The opening meeting, fixed for the investigation of the picturesque little valley down which flows the famous trout stream, with Driffield as the actual place of meeting, was the means of introducing members to a district of the East Riding which the Union has never before visited. On this occasion the Union met with the utmost kindness on the part of one of its members, Mr. W. H. St. Quintin, over whose property the route lay. At the meeting the chair was occupied by Mr. N. F. Dobrée, F.E.S., President of the Entomological Section, and before leaving Driffield a visit was paid to Mr. Mortimer's well-arranged and most interesting museum.

The second excursion was held in June, at Dewsbury, and the districts visited were Bretton Park, Coxley Valley, and Bullcliffe Wood. The arrangements were admirably made by Messrs. P. F. Lee and Chas. P. Hobkirk, F.L.S., the latter of whom, in his capacity of President of the Botanical Section, presided at the meeting. Some interesting observations were made during the day, and the only regret is that, in a place so conveniently accessible to the great body of members and associates, the attendance was not more than an average one.

The third meeting was arranged for July, for the investigation of Kildale, a picturesque and sequestered little valley in the Cleveland Hills. Thanks to the local knowledge and excellent arrangements made by the Middlesbrough members, the excursion was more than usually productive of good results, especially to the conchologists, entomologists, and botanists, the investigations of the two latter sections being instrumental in discovering a lepidopterous insect new to the county list and a plant additional to the North Riding flora. The meeting was for convenience held at Middlesbrough, the chair being occupied by Dr. W. Y. Veitch, the President of the Cleveland Naturalists' Field Club.

The August Bank Holiday excursion was devoted to Upper Swaledale, and the district being much too inaccessible for a single day's excursion, the observations were extended over three days, as was done in Teesdale in the preceding year. There was a fair attendance of members, and the Union was particularly fortunate in having the presence of Mr. J. G. Goodchild, F.G.S., by whom the whole of the district had been geologically surveyed. His able guidance and genial company made the excursion one that will be recalled with pleasure by all who joined in it. The chair of the meeting, which was held at Muker, was occupied by the Rev. R. V. Taylor, B.A., the Vicar of Melbecks.

The closing meeting of the year was one arranged in connection with the Leeds meeting of the British Association, and by the kindness of an old member of the Union, Mr. Walter Morrison, M.P., was held at Malham. The meeting was a successful one, and was well attended, both by members of the British Association and of the Union. Mr. C. P. Hobkirk presided at the meeting, which was very short, the usual sectional reports being omitted.

On all these occasions the Union has been indebted to the unvarying kindness with which Yorkshire landowners facilitate scientific research on their estates, and the opportunities granted by the various railway companies whose lines run through Yorkshire contribute their share to promoting the success of the Union's investigations.

The Societies which constitute the Union are now thirty-nine in number, as against forty last year. Two small societies, numbering eighteen members between them, have ceased to exist, viz., the Middlesbrough Junior Naturalists' Club, whose members now join in the work of the Cleveland Club, and the Practical Naturalists' Society, whilst another Society of thirty members, the Leeds Y.M.C.A. Naturalists' Club, withdrew from the Union at the beginning of the year. On the other hand, two new Societies have been

admitted—the Scarborough Naturalists' Society with thirty-seven members, and the Ravensthorpe Naturalists' Society with 124.

The statistics which the Secretaries of the various Societies have again been kind enough to furnish, show a slight increase in the number of Associates, the aggregate membership of the thirty-nine Societies now amounting to 2,580, an increase of sixty-three. Adding to this the number of direct members, the total numerical strength of the Union is 3,010.

The Membership now stands at 430, an increase of twenty on the previous year. During the year, 43 new members have been elected.

The Union has been unfortunate in losing by death several good supporters in Messrs. Jas. Backhouse, F.L.S., Wm. Aldam, D.L., J.P., Edward Hailstone, F.S.A., John Grassham, Walter W. Booth, Francis H. Potter, and E. B. Wrigglesworth, the latter of whom was at one time a Secretary of the Entomological Section. The most serious loss has been that of a member of the Executive Committee in Mr. S. A. Adamson, F.G.S., who had for several years been the life and soul of the Geological Section and a most energetic member of the committees concerned with geological research.

The Financial Position of the Union has been a subject of some anxiety to the Executive during the year, as the very heavy loss which the Union sustained in the matter of the publication of the West Yorkshire Flora and difficulty in recovering some of the arrears of subscriptions, have much embarrassed the Treasurer in paying off the Union's liabilities. The number of copies of the Flora which are left in stock is quite sufficient to clear off the liability incurred for its publication, and members could do the Union good service by providing themselves with the work; but so long as the unsold copies remain in hand, the Union's work in publishing Transactions will be somewhat restricted.

Much credit is due to the various members who act as local Treasurers for the service which they render to the Union, many of them keeping the subscriptions in their district regularly and systematically collected, and thereby avoiding the accumulation of the arrears which in certain instances form so serious an inconvenience.

It is satisfactory to note the increasing number of members who avail themselves of the convenient method of instructing their bankers to pay the subscription on its falling due.

The Publications of the Union have been as in former years.

The Transactions.—Part 14 was issued in September of this year, and was devoted to a Report by Mr. Robert Kidston, F.R.S.E.

on the Carboniferous Flora of Yorkshire, being the first of the reports prepared for the Union's Fossil Flora Committee. The second of these reports is in course of preparation by Mr. Wm. Cash, and will deal with the Flora of the Halifax Hard Bed.

Part 15, which is devoted to the continuation of Mr. J. Gilbert Baker's 'North Yorkshire,' is now ready for issue to the members, and will very shortly be sent out.

All the sheets intended for inclusion in Part 16 are printed or in the printer's hands, and it is proposed to issue it about the middle or end of January next.

When this has been issued, the arrears in the publication of the Transactions, which have for some years been a source of anxious consideration to the Executive, will have been overcome, and it will afterwards be practicable to issue each part during the course of the year for which it is due.

The Library continues to increase by means of donations and exchanges, and is suitably accommodated in book-cases at the Leeds Mechanics' Institute.

The Sections of the Union have carefully carried on their work during the year, and it is to their efficient management that much of the success which attends the excursions has been attributable.

Committees of Research.—This important feature of the Union's work has been further developed during the year by the appointment at the last annual meeting of three additional Committees, all working in conjunction with similar ones of the British Association.

Of these new Committees, the one for collecting and recording Geological Photographs has worked with remarkable success, as was evidenced by their having contributed the larger portion of the excellent show of geological photographs which was exhibited at this year's meeting of the British Association.

The Committee for collecting information as to the Disappearance of Plants from their old habitat, has also carried on its work with success, and contributed a larger number of facts to the report which Prof. Hillhouse gave to the British Association this year. The detailed Yorkshire report, compiled by Messrs. C. P. Hobkirk, F.L.S., and P. F. Lee, has been published in 'The Naturalist.'

The Committee appointed for the investigation of the Cryptogamic Flora and Invertebrate Fauna of the Freshwaters of Yorkshire has accumulated a number of interesting facts, but has been unable to frame a report, from inability to obtain from the British Association Committee copies of the necessary schedules. This

being mentioned at the British Association Meeting, the Yorkshire Committee was encouraged to frame a schedule of its own, and it is therefore to be hoped that in another year it will be in a favourable position for reporting good work in a most fascinating field of study.

Of the Committees of older standing, the Yorkshire Boulder Committee, which has during the past three years worked so energetically and successfully, has suffered most seriously by the decease of its secretary, Mr. S. A. Adamson, but has nevertheless been able to report a considerable number of erratics, and to again occupy a prominent part of the report on Erratics given to the British Association.

The Yorkshire Fossil Flora Committee has also continued its investigations, the first portion of which is already in print. and the second instalment, which Mr. W. Cash, F.L.S., has in preparation, will include some observations of considerable interest bearing upon the flora of the Halifax Hard Bed.

The Yorkshire Marine Zoology Committee has no report to make, not having been able to prosecute active operations, probably owing in part to the Union not having had a coast excursion.

The Yorkshire Coast Erosion Committee has done something in the direction of recording facts bearing upon its subject, but is not prepared as yet to make any detailed report.

British Association.—The Union has again been appointed one of the Corresponding Societies of the Association, and was represented at the meeting held in Leeds this year by the Rev. E. P. Knubley, M.A., and Messrs. C. P. Hobkirk, F.L.S., and Wm. Cash, F.L.S.

Life Membership.—Your Executive having considered that it would materially benefit the Union to enrol a number of Life Members, the qualification being a donation not less in amount than Five Guineas, ventured to address themselves to a number of noblemen and gentlemen of the county or connected with it, and are pleased that the response has been gratifying. Several Life Members have now been enrolled, and the Executive hope still further to increase the number.

The Presidency for next year (1891) has been offered to and accepted by an old and distinguished member of the Union—Prof. A. H. Green, M.A., F.R.S., of the University of Oxford.

In conclusion, your Executive have to place on record their sense of gratitude to the Lord Bishop of Wakefield for the honour which he has conferred upon the Union by his tenure of the presidency for the year which has now come to a close.

July 1891.

YORKSHIRE NATURALISTS' UNION.

ANNUAL MEETING AT HALIFAX.

THE 29th Annual Meeting of the Union was held at Halifax on the 18th November, 1890. Through the kindness of the Halifax Literary and Philosophical Society, the Lecture Theatre at the Museum, Harrison Road, was placed at the disposal of the Union for the purpose of holding its various meetings. The Ackroyd Museum and Art Gallery, the Public Library at Belle Vue, and the Museum of the Literary and Philosophical Society were very generously thrown open throughout the day to members and associates of the Union. It was chiefly to Mr. J. W. Davis, F.G.S., Mayor of Halifax, and other local members of the Union, that the success of the meeting was due.

At three o'clock the various sections met in the rooms of the Museum for the purpose of electing their officers for the ensuing year, and for the consideration of their annual reports.

An hour later the General Committee met in the Lecture Theatre of the same institution. Fifteen societies were officially represented by delegates, and other six were unofficially represented by permanent members of the General Committee. The attendance also included one ex-President (Rev. W. Fowler, M.A.), all the Honorary Secretaries (Mr. Wm. Denison Roebuck, F.L.S., Rev. E. P. Knubley, M.A., and Mr. Edgar R. Waite, F.L.S.), six members of the Executive, one President and four Secretaries of Sections, three of the local Treasurers, and nine other permanent members of the General Committee, the total attendance being forty-seven.

The chair was occupied by the Chairman of the Executive (Mr. C. P. Hobkirk, F.L.S.). The minutes of the previous annual meeting were taken as read. The 29th Annual Report (as printed on p. 219) was read by the Rev. E. P. Knubley, M.A., one of the Hon. Secretaries, and on the motion of the Chairman, seconded by Mr. J. W. Davis, F.G.S., F.L.S., was unanimously adopted.

The Secretary then read the recommendation of the Executive that the excursions for 1891 be fixed for the following places, the selection of dates to be left for decision by the new Executive:—

South-East Yorkshire	...	Sledmere.
North-East ,,	...	Hayburn Wyke.
North-West ,,	...	Leckby Carr.
Mid-West ,,	...	Gisburn.
South-West ,,	...	Conisborough and Edlington Wood.

Some discussion took place with regard to the Mid-West Yorkshire excursion, and ultimately Grassington was substituted for Gisburn,

on the motion of Mr. J. W. Davis, F.G.S., F.L.S., seconded by Mr. J. H. Howarth. The amended programme was then adopted, on the motion of the Chairman, seconded by Mr. G. T. Porritt, F.L.S., F.E.S.

The annual meeting for 1891 was the next subject for consideration, and a letter was read from the Scarborough Field Naturalists' Society cordially inviting the Union to hold the Meeting at Scarborough. The invitation was unanimously accepted, on the motion of the Chairman, seconded by Mr. J. J. Stead.

Proceeding to the election of officers, the Chairman announced, as stated in the concluding paragraph of the Annual Report, that the Presidency for the ensuing year had been offered to and accepted by one who had formerly been a familiar figure on the Union's excursions—Professor A. H. Green, M.A., F.R.S., holding the Geological Chair at the University of Oxford, and late of the Yorkshire College, Leeds.

On the motion of the Chairman, Mr. Wm. Denison Roebuck, F.L.S., and the Rev. E. P. Knubley, M.A., were re-elected Honorary Secretaries of the Union. It was stated that a letter had been received from Mr. Percy H. Grimshaw, in which he mentioned that owing to increased pressure of private work, he was compelled to retire from the office of Hon. Assistant Secretary, whereupon the Chairman announced that the Executive recommended that a third General Secretary of the Union should be appointed in the person of Mr. Edgar R. Waite, F.L.S.; this was unanimously carried on the motion of Messrs. J. W. Davis, F.G.S., F.L.S., and G. T. Porritt, F.L.S., F.E.S. A letter was read from Mr. Charles Brownridge, stating that his health compelled him to ask to be allowed to retire from the post of Hon. Librarian. The matter was referred to the Executive for consideration.

On the motion of Mr. Washington Teasdale, seconded by Mr. J. A. E. Stuart, the following nine retiring members of the Executive were re-elected:—Rev. W. Fowler, M.A., Liversedge; Messrs. J. W. Davis, F.G.S., F.L.S., Halifax; William Cash, F.L.S., Halifax; C. P. Hobkirk, F.L.S., Dewsbury; John Emmet, F.L.S., Boston Spa; Benj. Holgate, F.G.S., Leeds; H. T. Soppitt, Bradford; J. J. Stead, Heckmondwike; and M. B. Slater, F.L.S., Malton. Mr Charles Brownridge, F.G.S., was elected in place of the late Saml. A. Adamson.

Mr. C. D. Hardcastle was re-elected one of the Auditors, and the election of a second Auditor was left to the Executive, Mr. J. E. Bedford, F.G.S., having resigned.

All the retiring Hon. Local Treasurers were re-elected, as follows:—Messrs. W. E. Brady, Barnsley; J. D. Butterell, Beverley; H. Speight, Bradford; J. A. E. Stuart, Dewsbury; Geo. Winter, Doncaster; L. B. Ross, F.C.S., Driffield; T. Bunker, Goole; W. Cash, F.L.S., Halifax; Riley Fortune, F.Z.S., Harrogate; John Stears, Hull; Edgar R. Waite, F.L.S., Leeds; M. B. Slater, F.L.S., Malton; T. F. Ward, Middlesbrough; Wm. Fletcher, Pickering; Thos. H. Nelson, M.B.O.U., Redcar; Rev. R. A. Summerfield, B.A., Ripon; Richard Barnes, Saltburn; J. H. Rowntree, Scarborough; Hugh Richardson, B.A., Sedbergh; W. N. Cheesman, Selby; A. T. Watson. Sheffield; J. J. Stead, Spen Valley; Geo. Parkin, Wakefield; Thos. Newbitt, Whitby; G. C. Dennis, York; and Mr. J. J. Howarth was elected to the vacancy at Skipton.

On the proposition of Mr. Lionel E. Adams, seconded by Mr. G. T. Porritt, F.L.S., F.E.S., all the Committees of Research were re-appointed, as follows:

The Yorkshire Boulder Committee.—Prof. L. C. Miall, F.L.S., F.G.S. (chairman); Messrs. C. D. Hardcastle, Leeds (vice-chairman); Samuel Chadwick, F.G.S., Malton (hon. secretary); J. E. Bedford, F.G.S., C. Brownridge, F.G.S., W. Lower Carter, M.A., F.G.S., Leeds; Rev. E. Maule Cole, M.A., Wetwang; J. W. Davis, F.G.S., F.L.S., Halifax; Prof. A. H. Green, M.A., F.R.S., Oxford; Wm. Gregson. Baldersby; B. Holgate, F.G.S., Leeds; Wm. Horne, F.G.S., Leyburn; Robert Law, F.G.S., James Spencer, Halifax; Thos. Tate, F.G.S., Leeds; J. W. Woodall, M.A., F.G.S., Scarborough; J. R. Mortimer, Driffield; and R. Wood, M.D., Driffield; with the Rev. H. W. Crosskey, M.A., as an honorary member.

The Yorkshire Marine Zoology Committee.—Dr. H. C. Sorby, LL.D., F.R.S., Sheffield (chairman); Messrs. J. Percy A. Davis, Halifax (hon. secretary); G. Brook, F.L.S., Edinburgh; J. D. Butterell, Beverley; W. Eagle Clarke, F.L.S., Edinburgh; John Cordeaux, M.B.O.U., Great Cotes; W. Cash, F.L.S., Halifax; Rev. W. C. Hey, M.A., York; Baker Hudson, Redcar; T. H. Nelson, Redcar; O. T. Olsen, F.L.S., Grimsby; Rev. H. Smith, M.A., Redcar; J. W. Woodall, M.A., F.G.S., Scarborough; with George Massee, F.R.M.S., Kew, as Botanical Referee.

The Yorkshire Fossil Flora Committee.—Prof. W. C. Williamson, LL.D., F.R.S., Manchester (chairman); James W. Davis, F.L.S., F.G.S., F.S.A., Halifax (vice-chairman); William Cash, F.G.S., F.L.S., F.R.M.S., 38, Elmfield Terrace, Halifax (hon. secretary); Messrs. Thos. Hick, B.A., B.Sc., Manchester; Benj. Holgate, F.G.S., Leeds; Robert Kidston, F.G.S., F.R.S.E., Stirling; Robert Law, F.G.S., Halifax; Prof. L. C. Miall, F.L.S., F.G.S.,

Leeds; James Spencer, Halifax; John Stubbins, F.G.S., F.R.M.S., Leeds; and William West, F.L.S., Bradford.

Yorkshire Coast Erosion Committee. — Mr. J. W. Woodall, F.G.S., Scarborough (chairman); Rev. E. Maule Cole, M.A., F.G.S., Wetwang (hon. secretary); Rev. H. E. Maddock, M.A., Patrington; Mr. J. C. I'Anson, F.S.A., F.G.S., Saltburn-by-the-Sea; and Dr. F. Fielder Walton, F.G.S., Hull.

Yorkshire Micro-Zoology and Micro-Botany Committee.—Dr. H. C. Sorby, LL.D., F.R.S., Sheffield (chairman); Messrs. J. M. Kirk, F.R.M.S., Doncaster (hon. sec.); C. B. Crawshaw, Dewsbury; Charles Crossland, Halifax; Prof. Alfred Denny, F.L.S., Sheffield; Rev. W. E. Handcock, M.A., Knaresborough; Chas. P. Hobkirk, F.L.S., Dewsbury; M. H. Stiles, Doncaster; and William West, F.L.S., Bradford.

Disappearance of Native Plants Committee.—Messrs. Charles P. Hobkirk, F.L.S., Dewsbury (chairman); P. Fox Lee, Dewsbury (hon. secretary); R. Barnes, Saltburn-by-the-Sea; Edward Birks, Sheffield; John Emmet, F.L.S., Boston Spa; John H. Phillips, Scarborough; Rev. W. A. Shuffrey, M.A., Arncliffe; Matthew B. Slater, F.L.S., Malton; Rev. Wm. Thompson, M.A., Sedbergh; and T. W. Woodhead, Huddersfield.

Geological Photographs Committee.—Messrs. James W. Davis, F.L.S., F.G.S., F.S.A., Halifax (chairman); James E. Bedford, F.G.S., Cardigan Villas, Headingley (hon. secretary); Godfrey Bingley, Leeds; Frederick W. Branson, F.I.C., F.C.S., Leeds; Rev. E. Maule Cole, M.A., F.G.S., Wetwang; George Fowler Jones, Malton; A. E. Nichols, A.M.Inst.C.E., Leeds; and F. Fielder Walton, F.G.S., Hull.

Voting papers for the election of 10 new Permanent Members of the General Committee had been sent to all members of the Union, and 32 of them had been returned, with the result that the following 10 members had been elected, viz.:—Rev. F. Addison, M.A., Thirsk; Messrs. Charles Crossland, Halifax; Elijah Howarth, F.R.A.S., Sheffield; Robt. Law, F.G.S., Halifax; Thos. Newbitt, Whitby; George Parkin, Wakefield; Rev. H. A. Powys, M.A., Meanwood; A. T. Watson, Sheffield; John Thrippleton, Leeds; and George Winter, Doncaster.

The following gentlemen were elected Life Members of the Union:—Rt. Hon. Lord Lilford, Oundle, Northants; Messrs. E. B. Wheatley Balme, Mirfield; Joshua Buckton, Leeds; Rt. Hon. Earl of Carlisle; Messrs. John B. Charlesworth, J.P.; Cecil G. S. Foljambe, J.P.; Ben. Hirst, J.P.; R. Heywood Jones, J.P.; Sir James Kitson, Bart., J.P., Leeds; Edward B. Lees, J.P.;

Arthur Marshall; Rev. Canon H. Newton; Henry Oxley, Leeds; C. B. E. Wright, J.P.; Jas. S. Cooke, F.R.A.S., J.P.; Col. John E. Champney, J.P.

The Ordinary Members elected were:—J. Edmondson, Halifax; George Fawcett, Keld; Edward Gledhill, Halifax; G. F. Harding, Halifax; Charles H. Hutchinson, Barnsley; W. B. Hutchinson, Liversedge; Tom Jubb, Halifax; Charles Middleton, Halifax; W. H. Newhouse, Brighouse; Owen Platt, Oldham; A. W. Reith, M.A., Halifax; Albert Seed, Halifax; John Shillito, Halifax; John W. Stather, Hull; Charles H. Thackrah, Halifax; James A. Toothill, Halifax; H. Whitley, B.A., Halifax; Henry J. Wilson, M.P., Sheffield; David Woodhead, Halifax; C. H. Worsnop, Halifax.

The sectional officers were next called upon to announce the names of the officers elected for 1891, as follows:

B. Vertebrate Zoology.—Mr. Edgar R. Waite, F.L.S., reported that all the officers of the past year had retired, and the following had been elected in their stead:—President, James Backhouse, F.Z.S., M.B.O.U., Harrogate; Secretaries, Riley Fortune, F.Z.S., Harrogate; Thos. H. Nelson, M.B.O.U., Redcar.

C. Conchology.—Mr. John Emmet, F.L.S., stated that all the old officers had been re-elected, viz.:—President, Rev. W. C. Hey, M.A., York; Secretaries, John Emmet, F.L.S., Boston Spa; Lewis B. Ross, F.C.S., Driffield.

D. Entomology.—Mr. G. T. Porritt, F.L.S., reported that the following appointments had been made:—President, G. T. Porritt, F.L.S.; Secretaries, Jas. H. Rowntree, York (re-elected); A. E. Hall, F.E.S., Sheffield.

E. Botany.—Mr. Charles P. Hobkirk, F.L.S., presented the report of the section, announcing that the officers had been elected as follows:—President, Charles P. Hobkirk, F.L.S., Dewsbury (re-elected); Secretaries, M. B. Slater, F.L.S., Malton (re-elected); J. A. Erskine Stuart, Heckmondwike.

F. Geology.—Mr. Samuel Chadwick, F.G.S., reported that the following officers had been elected:—President, C. D. Hardcastle, Leeds; Secretaries, W. Lower Carter, M.A., F.G.S., Leeds (re-elected); Samuel Chadwick, F.G.S., Malton (re-elected).

This concluded the business of the General Committee, whereupon Members adjourned to the White Swan Hotel where tea was provided.

The Annual Public Meeting was held at seven o'clock in the Lecture Theatre of the Museum of the Halifax Literary and Philosophical Society. The chair was taken by Mr. James W. Davis,

F.G.S., F.L.S., F.S.A., Mayor of Halifax, and an old and prominent member of the Union.

The minutes of the previous annual meeting having been printed and circulated were taken as read, as was also the Annual Report which appears on pages 219-223 of 'The Naturalist.'

The excursion-programme for 1891 having been announced to the meeting, the Chairman called upon the Right Rev. W. W. How, D.D., Lord Bishop of Wakefield, to deliver the Annual Presidential Address, entitled 'The Study of Natural Science.'

The Bishop, who had a cordial reception, said he had not for years been able to do anything in scientific studies, except of a most casual and superficial character. But his interest in scientific matters could never, he thought, decline. He thought they had learnt in these latter days that a patient collection of facts was a key which opened the gate of all new avenues of discovery, and of all enlargements of their area of knowledge. Of course very few single minds could combine powers of minute observation, of delicate comparison, of intuitive recognition of the true bearing of phenomena, with a large grasp of general principles, and a profound skill in fitting all details into the great theories which characterised a Darwin. Darwin seemed to combine all the powers which could contribute to the advancement of science. He was a thinker, and a collector of facts—he was, indeed, he supposed, one of the most splendidly-equipped minds for the prosecution of natural science which one could conceive of. But though few could combine all those various powers, a very great number could contribute something to the advancement of natural science. As an illustration of this point, the Bishop mentioned the splendid astronomical discoveries at the beginning of the seventeenth century. Tycho in Denmark, Kepler in Germany, and Galileo in Italy, working each in his own way to accomplish results which were to shake the world. No one of these could have won the splendid triumphs which were achieved without the other two. He urged the members of this Union to learn the habit of accurate observation, and to record carefully what they observed. Take, for example, botany—say a plant new to the region where it was found, such as the *Arenaria gothica*, discovered at Ribblehead last year. This meant not only an interesting find, but a contribution to far larger fields of inquiry, such as the distribution of the flora throughout the world, the modes and causes of that distribution, the changes in the surface of the earth, and the like. So, whatever branch of science they undertook, let them gather facts, be accurate, and record carefully. But as a Bishop, with a charge of the

highest interest laid upon him, he could not be content to deal only with the purely scientific aspect of this question. He knew that some said that science and faith occupied two distinct spheres which never touched. He never could hold that. They did touch. They overlapped, and they intersected. Of course, each had a region of its own untouched by the other. But it was foolish to say there was no point of contact. Take such things as the antiquity of man, the history of the Creation, the universality of the Deluge, the history of the sun and moon standing still—these were instances of how the two areas intersected. Well, he had no fears whatever from a patient, honest, candid, reverent study of Nature. God's library did not consist of one volume alone. There was the book of nature and the book of conscience, no less than the book of the Revealed Word; and if God was the author of these books, he did not think they could really contradict one another. If they did seem to do, we might be reading wrongly the one volume or the other. It had been so before, it might be so now. And if there was anything in the past history of the Church more humiliating than another—he supposed moral corruption was, but next to that—it was the fulminations of the Church against physical science. What a sad picture is that of Galileo, with his lucid insight and his firm grasp of the Copernican system! Who could help almost weeping as one reads of the aged philosopher made by the Inquisition to go down on his knees, and, with his hand on the Bible, to swear that all he taught was a tissue of lies? Which really was the more likely to lead to infidelity—the light of the sage or the darkness of the Church? Well, they had seen something like it in later times; in reference to Geology, for instance, and the story of the days of Creation in Genesis. Again, they had Evolution, and the same scare had to some extent been created in these later days. Yet he thought that the higher Christian philosophy, now more and more recognising the doctrine of the immanence of the Creator in all creation, could accept the doctrine of Evolution without fear. He did not want to assume that everything had been definitely and conclusively proved, but he thought they need not be in the least afraid if it should be conclusively proved; and he supposed they were advancing every day towards the acceptance of that truth as a great fact in scientific discovery. But, if proved, what then? Why, then what he would say was that they had been taught what was God's method of creating. Surely the creating by successive stages of advance was not less wonderful, and gave one no less idea of the power and wisdom of the Creator than the creating by an enormous number

of separate and disconnected acts. If they traced a few links farther back of cause and effect, they must at last come to the point where the last link was held by an invisible Hand.

Following the delivery of the address, a hearty vote of thanks was accorded to the President for his services during the past year, on the motion of Mr. Charles P. Hobkirk, F.L.S., seconded by Mr. Wm. Cash, F.L.S., and supported by the Ven. Archdeacon Brooke.

On the motion of the President, seconded by the Rev. E. P. Knubley, M.A., a similar vote was passed to the Mayor, for his services in the chair. A vote of thanks to the Council of the Halifax Literary and Philosophical Society for kindly allowing the Union the use of their Museum for the various meetings terminated the proceedings.—E.R.W.

NOTE—GEOLOGY.

Geological Photographic Committee of the Y.N.U.—At the last meeting of the British Association an Exhibition of Geological Photographs was held in Leeds, under Section C (Geology), a full report of which was published in the 'Naturalist,' 1891, pp. 69—74, by Mr. J. E. Bedford, F.G.S., the local Secretary for Yorkshire. It is gratifying to learn that in the first year's work Yorkshire contributed more than one-half of the total number of photographs received by the Committee, and great satisfaction was expressed by the meeting at the way in which the work had been taken up in Yorkshire. We have been informed by Mr. Bedford that our county still maintains its position, as shown by the following extract from a letter just received from Mr. Osmund W. Jeffs, the Secretary of the Geological Photographs Committee of the British Association :—'Your contribution is again the first in point of numbers, and I think is not excelled by any in interest and variety. The valuable assistance rendered by your Committee is a great encouragement to us . . . .' There have, no doubt, been many photographs of geological interest taken since last meeting, in addition to those already received, and Mr. Bedford will be glad if all such be sent to him at 9, Cardigan Road, Leeds, as early as possible, to enable him to include them in the list about to be published.

THROUGH AIREDALE.

Through Airedale from Goole to Malham. By JOHNNIE GRAY. . . . With Illustrations and Map . . . 1891. 8vo, pp. lxiv + 302.

We have pleasure in commending this little book to Yorkshire naturalists and topographers, and to the general tourist. It is got up in a handy form for the pocket, and is really a great book in small compass. It cannot fail to be useful, both to the naturalist and the topographer, and will serve as a book of reference at home, and as a guide and a friend when abroad. Small though it may look, there is an immense amount of labour in it. None but those who have attempted similar work can estimate the labour and care required in such an undertaking. Nearly everything that is worth

seeing in the valley is pointed out, and advice is given as to the best way of seeing it. The pith of the history of each old church, castle, or manor-house is given; and the natural scenery is described in a concise, clear, and easy style. The names of places are printed in a heavy type to catch the eye; this is an ingenious and useful adjunct to the index, and will save much time. There is a good map of Airedale, including miles of country on both sides, and many illustrations of interesting objects, together with a plan of Kirkstall Abbey. A glance at the map, taking in the whole of Airedale from the Humber to Settle, will show that the valley is studded over with old parish churches, castles, historic manor-houses, ancient seats of Yorkshire gentry, fortifications, ruins, and numberless other attractive objects, so that we may easily conceive that the author has had ample scope for his pen. The hum of business fills a portion of the valley—from Castleford to Bingley—and many places in this part of Airedale have lost their former beauty; and many birds and other creatures have been banished by an ever-increasing population; but, above the latter place, the author takes us among murmuring streams, quiet ferny dells, meadows of wild flowers, breezy heights, and glorious river-pictures—spots at which one may spend a day or a week pleasantly, at little cost.

There is a list of the birds of Airedale, compiled by Mr. E. P. Butterfield, of Wilsden; a list of the flowering plants and ferns, compiled by Mr. H. T. Soppitt; a chapter on Geology, and an interesting gossip on Folk-lore. This portion, which is paged separately, and placed at the beginning of the book, would, in our opinion, have been better at the end, and indexed along with the other matter. It might also have been an improvement if some of the common plants which are found everywhere had been omitted, and more stations given for the rarer species. As the list stands, a non-botanical reader might be liable to fall into the error of concluding that a plant is known only in the one or two stations indicated, whereas that particular plant might occur in twenty or thirty different places. This might, however, be easily remedied in a second edition. It is pleasing to observe that misprints and cases of incorrect spelling, which often creep into the technical parts of the very best scientific books, are in this very rare indeed. The book is not got up in a gaudy form to lie on a drawing-room table as an ornament, but is designed for real everyday use. On the whole, we think the author has succeeded well in his work, and we hope that the result may encourage him to bring out similar guides for some of the other Yorkshire valleys.—G. R.

THE YORKSHIRE NATURALISTS' UNION AT LECKBY CARR.

CONSIDERING the winter-like weather which prevailed during the middle of May, the Yorkshire Naturalists' Union had reason for congratulation that Whit-Monday, the 18th, the date fixed for the first excursion of the season, was so beautifully fine. There was almost uninterrupted sunshine from morn until night, but yet the weather was of a nature to maintain the extraordinary character of the season, the peculiarity of which will no doubt long remain unequalled. The day opened with 12° of frost, and although the sun was quite powerful, a cold cutting wind from the north almost froze one when in the shade.

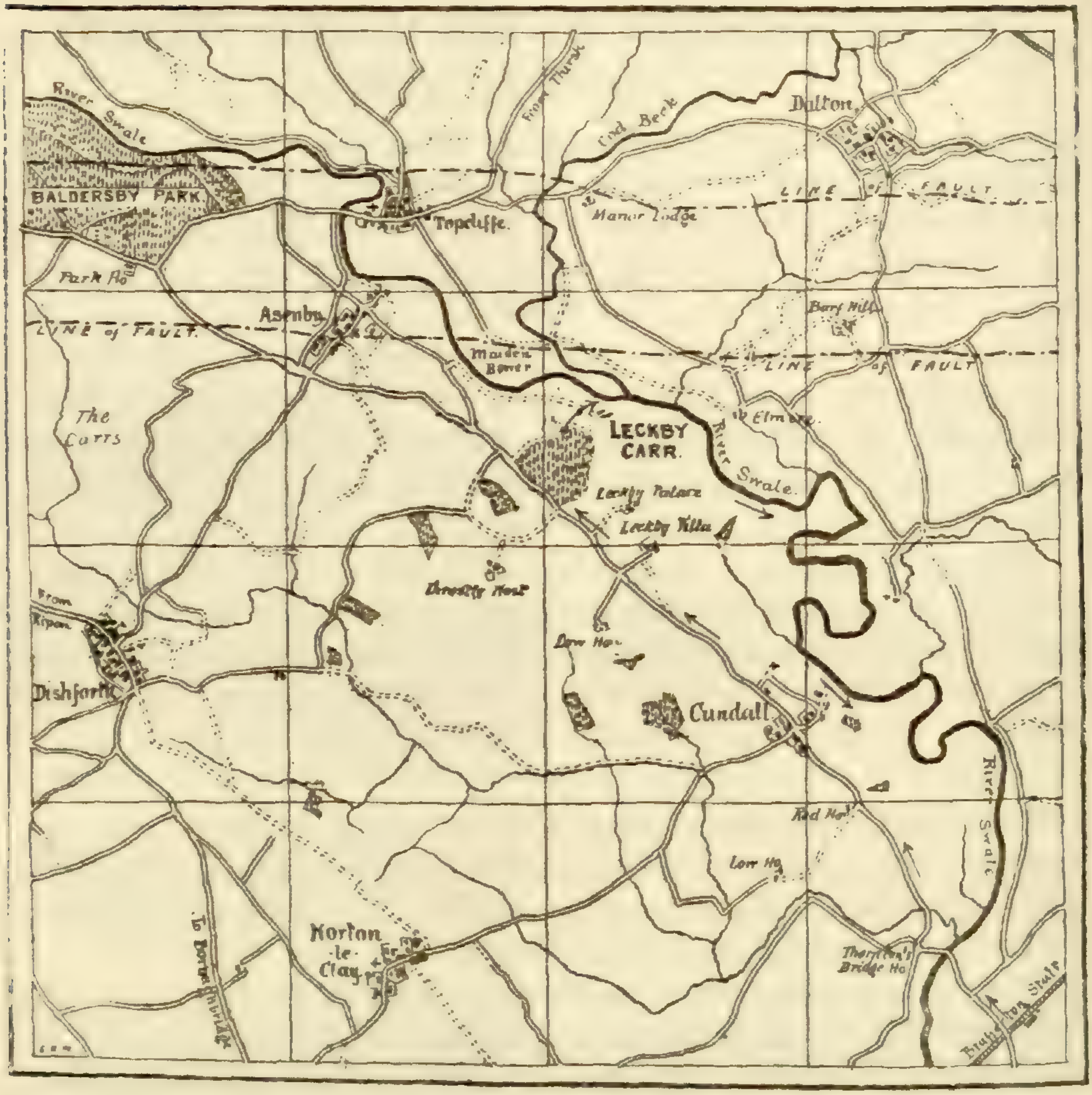
This excursion was the ninety-first in the annals of the Union, and was arranged for the investigation of Leckby Carr, Baldersby Park and Woods, Cundall, Dishforth, and that part of the country lying on the south-west side of the river Swale, forming a portion of the Vale of Mowbray. Nearly the whole of the district is the property of Mr. Basil T. Woodd, J.P., D.L., who not only kindly granted the Union permission to roam over his estate, but also appeared in person to welcome the members to the district. Permission was also handsomely granted by the Dowager Viscountess Downe for the investigation of Baldersby Park and Woods.

The party, numbering about seventy, left Brafferton Station on the arrival of the 10.31 train from Pilmoor and made their way to Leckby Carr, passing through the village of Cundall. Arrived at the Carr the party was met by Mr. Basil T. Woodd and Mr. T. Carter Mitchell, and, after some little consultation, moved off in various directions under special leadership or not as the inclination or pursuit of the individual required.

The geologists, under the direction of Mr. Mitchell, proceeded to the river in order to examine some exposures along its course; they worked up the stream and eventually arrived at Asenby, whence they returned to Brafferton.

Another party, chiefly ornithologists, commenced work at Leckby, and some considerable time was spent in the woods; then following the route set forth in the excursion-programme they rambled down the right bank of the Swale, and struck the high road to Brafferton at Thornton Bridge.

A number of botanists, with Mr. Wm. Foggitt as their guide, first investigated Leckby Carr, and then divided, some going north-west to Asenby, while others paid attention to the district lying between the Carr and Brafferton.



EXPLANATION.—The Map is divided into square miles by horizontal and perpendicular lines. Brafferton Station will be found in the lower right-hand corner, and the general line of route is indicated by arrows. The shaded areas are woods and plantations. The lines of fault shown are referred to in the geological paragraph.

Another party, whose chief end was conchological, under the direction and leadership of Mr. Wm. Nelson and Mr. Wm. Denison Roebuck, F.L.S., searched the hedge-banks of the lane as they proceeded towards Cundall, where young examples of *Helix cantiana*, *H. hispida*, and *H. hortensis* were obtained. A great sameness prevailed amongst the specimens of the last-named, by far the greatest proportion of them being yellow, coloured with five narrow bands. Arriving at Leckby Carr the party was strengthened by the accession of two or three more recruits, and now took the road to the left past Throstle Nest towards Dishforth. In a small coppice near Throstle Nest they stayed and searched amongst the fallen leaves for a short time, soon finding examples of *Zonites cellarius*, *Z. alliarius* and its var. *viridula*, *Z. nitidulus*, *Z. purus*, *Vitrina*, *Helix hispida*, *Arion*

minimus, *A. bourguignati*, etc. Leaving this coppice the party turned to the right and made for the 'low-lying piece of country with slow-running ditches' mentioned in the circular. Alas for their anticipations, the slow ditches were without water, as a rule, but after careful searching some water was found, and the 'gravy-strainers' being set to work, there were obtained *Limnæa peregra*, *Planorbis spirorbis*, and *Pisidium pusillum*. The party following this what may fairly be termed a 'dry ditch,' came to a drain, and here obtained, in the vicinity of a slight wooden bridge, *Bythinia tentaculata*, *Planorbis umbilicatus*, and *Limnæa peregra* of quite another form from those first met with a few yards away. Here the junior member of the party secured a specimen of the 'tinker,' or ten-spined stickleback, a rather uncommon species. The commoner three-spined stickleback was also found. The drains were then left, and the party crossed some fields and struck into a road which led through Asenby. Just as they were leaving the village search was made at the foot of a wall, the result being the finding specimens of *Limax maximus*, *Zonites cellarius*, *Vitrina*, *Helix aspersa*, *H. hispida*, and *H. rotundata*. Leaving the road, and taking to the banks of the Swale, a number of botanists were encountered, and their leader, Mr. W. Foggitt, kindly showed the nearest way to Leckby Carr. Here not a single shell of any kind was to be found, and though there was some water, it was of a coffee colour and of a pungent odour, and was quite devoid of molluscan life. The woods here showed evidences of the severe frost of the night preceding, the beautiful foliage of the beech trees being completely shrivelled up. Leaving this unprofitable ground the party took to the main road again, leaving it at Cundall, where they were strengthened by another member. After leaving the pretty village some fields were crossed and a shallow grass-grown pond found, where *Limnæa peregra* was obtained. Crossing more fields another similar pond was reached close to the margin of the Swale, which yielded *Physa hypnorum* rather commonly, also *Planorbis umbilicatus*, one specimen of *Pl. contortus*, and several of *Pisidium fontinale*. Crossing more fields the road was reached again near Red House, but just before this was reached the latest recruit went to turn over a stone lying on the ground near a clothes-post and evidently used by the women of the farm to stand on when tying up the clothes-cord. Turning it over he found it to be a quern, one of the primitive hand-mills formerly used for grinding corn. The antiquarian instinct was too strong to permit the quern to fulfil its present rather ignoble purpose, so after some considerable trouble in finding the owner it was purchased at small cost and carried off in triumph, to be placed in more fitting surroundings by its new possessor. This

was the ending of a pleasant round, and soon afterwards the whole party reached Helperby.

In addition to these set parties several members indulged in individual research, and investigated Baldersby Park and other places within the restricted district.

At the close of the day it was found that the whole of the district appointed for investigation had received attention from one or more members.

By 5.30 most of the naturalists had returned to Brafferton, and fifteen minutes later sat down to tea at the Golden Lion Inn, Helperby. It may be noted here that Helperby and Brafferton are practically one and the same village, the road only dividing the two places.

The spacious rooms of the Helperby Mechanics' Institute—the use of which was, by the kindness of the Rev. C. B. Hunter, obtained for a nominal sum—were next visited, and at 6.30 the Sectional Meetings were held; these were followed at seven o'clock by the General Meeting.

The General Meeting was held under the chairmanship of the President of the Leeds Geological Association, Mr. Charles Brownridge, F.G.S. After passing the minutes of the previous meeting, the following persons were elected members of the Union:—F. R. Collins, Huddersfield: C. E. Grahl, Headingley; E. Hawkesworth, Leeds; J. H. Howarth, Skipton; Rev. W. H. Norman, M.A., Huddersfield; Geo. H. Niven, Cleckheaton; Geo. G. Ianson, Wakefield; K. McLean, T. Laycock, jun., and J. Lund, Harrogate; Rev. Hy. E. Maddock, M.A., F.G.S., Patrington; A. S. Marriott, Dewsbury; Thomas E. Miln, Darlington; and Chas. Waterfall, Renishaw, Chesterfield. Mr. Wm. C. Stobart, Spellow Hill, was elected a life-member.

The following ten Societies were represented on the Excursion:—Wakefield Naturalists' Society, York and District Naturalists' Society, Leeds Geological Association, Harrogate Naturalists' Society, Scarborough Field Naturalists' Society, Leeds Naturalists' Club, Conchological Society, Dewsbury Naturalists' Society, Thirsk Natural History Society, and Scarborough Philosophical Society.

On the motion of the Rev. George Gill, seconded by Mr. A. H. Pawson, a vote of thanks was passed to Mr. Basil T. Woodd for granting the Union permission to investigate his estates in the Leckby Carr district; to Lady Downe for similar permission for Baldersby Park and Woods; and to Messrs. T. C. Mitchell, F.S.A., and William Foggitt for contributing to the excursion-programme or leading parties during the day.

The Sectional Reports were next presented, and the following accounts have since been supplied :—

The Vertebrate Zoology Section was officially represented on the field by one of its Hon. Secretaries, Mr. Riley Fortune, F.Z.S. (by whom the following report is furnished); and among others who attended were Messrs. Edgar R. Waite, F.L.S., J. Braim, W. Hemingway, J. Whitaker, J. Lund, and others. Several lady visitors also attended. The members were well spread over the district under investigation, and, as the records for the day show, they were not idle. Some of the members went over the whole area, while others, chiefly Messrs. Waite, Braim, and Fortune, confined their labours to Leckby Carr, and with excellent results. During the day seven species of mammals were met with. The country visited was very prolific in bird-life, and no less than 60 species were recorded; of these 41 were residents and 19 summer visitants. The nests of 13 species were found containing eggs; the egg which probably excited most interest was a Cuckoo's, found in the nest of a Hedge Accentor. Nests of the Barn Owl and Lesser Redpole were also found, but they did not contain eggs. Seven species of young birds were also seen; all these are marked on the list appended. One particularly noticeable feature observed during the ramble was the scarcity of Kingfishers (only one seen), and the total absence of Dippers and Sandpipers. One each of Reptiles and Amphibians was noticed, and ten species of Fish, including a very fine Chub, weighing at least 3½ lbs., and, curious to relate, having only one eye; from the appearance of the fish it had never possessed another. This specimen was caught by an angler in the Swale, just below Cundall Church. The ten-spined stickleback, which is a new record for the district, was taken in a stream between Asenby and Dishforth.

The following is the complete list of Vertebrates recorded. The asterisks (*) denote that eggs, and the daggers (†) that young birds were observed.

Mammals.

Hedgehog.
Squirrel.
Brown Rat.
Water Vole.
Common Field Vole.
Hare and Rabbit.

Migrants.

Wheatear.
Whinchat.
Redstart.
Whitethroat.
Lesser Whitethroat.
Blackcap.
Chiffchaff.
Willow Warbler.
Wood Warbler.
Sedge Warbler.
Yellow Wagtail.
Tree Pipit.
Spotted Flycatcher.
Swallow.
Martin.
*Sand Martin.
Swift.
*Cuckoo.
Landrail.

Residents.

†**Missel Thrush.**
Song Thrush.
†Blackbird.
Redbreast.
Goldcrest.
*†Hedge Accentor.
Great Tit.
Blue Tit.
Coal Tit.
Marsh Tit.
Wren.
Pied Wagtail.
Meadow Pipit.
Tree Creeper.
*Greenfinch.
*House Sparrow.
Tree Sparrow.
*Chaffinch.
Linnet.
Lesser Redpoll.
Bullfinch.
Yellow Bunting.
*†Starling.
Jay.
†Magpie.
*†Jackdaw.
Crow.
†Rook.
Lark.
Green Woodpecker.
Kingfisher.
*Sparrow Hawk.
Heron.
*Mallard.
*Ring Dove.
*Stock Dove.
*Pheasant.
Partridge.
Moorhen.
Lapwing.
Common Snipe.

Reptile.

Common Lizard.

Amphibian.

Great Crested Newt.

Fish.

Perch.
Ruffe.
Three-spined and
Ten-spined Sticklebacks.
Gudgeon.
Roach.
Chub.
Minnow.
Pike.
Grayling.

For the Entomological Section its senior Secretary, Mr. J. H. Rowntree, reported that owing to the exceptional lateness of the season, due to the protracted winter—a very severe frost having prevailed in the district during the previous night—coupled with a keen north wind, which made itself unpleasantly felt in the open, but few insects were on the wing, and only the following species of Lepidoptera were recorded:—*Pieria rapæ*, *Anthocaris cardamines* (female), *Vanessa urticæ*, *Arctia menthastri*, and *Diurnea fagella*. Mr. M. L. Thompson and Mr. William Hewett have supplied the accompanying list of Coleoptera:—

Carabus nemoralis Müll.
Notiophilus biguttatus F.
Elaphrus cupreus Duft.
Loricera pilicornis F.
Harpalus ruficornis F.
Pterostichus madidus F. **P. diligens** Sturm.
Calathus cisteloides Panz.
Anchomenus dorsalis Müll.
Hydroporus lituratus F. In ditches.
Agabus bipustulatus L. In ditches.
Anacæna variabilis Sharp, **A. limbata** Sharp. In ditches.
Choleva fumata Spence. In a carcase.
Philonthus decorus Grav.
Acidota crenata F. Under fir-chips (a rare insect).

Anatis ocellata L. On firs.
Coccinella 10-punctata L. On firs.
Halyzia 14-guttata L. On firs.
Elater balteatus L. Under bark of firs.
Melanotus rufipes Herbst. In decaying fir-stumps.
Rhagium bifasciatum F. In decaying fir-stumps.
Lochmæa capreæ L. On birches.
Lochmæa suturalis Thoms. On heather.
Deporäus betulæ L. On birches.
Apion hæmatodes Kirby. On nettles.
Polydrusus cervinus L.
Ceuthorrhynchus pollinarius Forst. On nettles.

For the Geological Section, Mr. W. Lower Carter, M.A., F.G.S., Secretary, the only officer of the Section who was present, reported that the sections had been visited under the leadership of Mr. T. C. Mitchell, F.S.A., and that a few common Lower Lias fossils had been found. Their first visit was paid to the large gravel mounds which flank the Swale for some distance, and shut off the swampy hollow of Leckby Carr from the river. These mounds are composed of rounded gravel embedded in a sandy matrix. This gravel appears to be of glacial origin, and is full of pebbles of grit and limestone from the Carboniferous beds, as well as others from beds ranging from the Silurians to the Lias. A large boulder of shap granite was seen in the river-bed not far from Leckby Carr, which indicates with great accuracy the direction in which the flow of ice must have taken place. Thence the party proceeded to view the two sections of the Lias beds which are exposed by the stream. The first is near Leckby Carr, and consists of a mass of Lias clay apparently resting on a deep red sandy clay, and overlaid by two feet of river sand. The question as to whether this Lias is in situ was warmly discussed, but there did not seem sufficient evidence to warrant an alteration of the line of fault marked on the Ordnance map. Near Asenby the Swale makes a sharp bend, and has eaten into the cliff, exposing a good section of the lower Lias beds. They consist of tenacious, blackish clay, with bands of concretionary limestone at intervals. After photographing this section, a start was made for Baldersby Park, where a fine erratic, of millstone grit, weighing probably three tons, was examined, measured and photographed.

The Botanical Section was under the guidance of Mr. William Foggitt of Thirsk, and, considering the early date and the very backward spring, showed tolerably satisfactory results. Between Brafferton and Leckby Carr the following species were noticed :—

Silene inflata, *Hypericum dubium*, *Rosa villosa*, *Pimpinella saxifraga*, *Centaurea scabiosa*, *Plantago media*, and *Humulus lupulus*. It was noticed that the foliage of the fine Beech trees near Cundall and Leckby, which a few days ago appeared beautifully green, was all browned and blackened by the recent intense frost. The Carr, which was unprecedentedly dry, yielded those two 'vegetable spiders' *Drosera rotundifolia* and *D. anglica*, *Vaccinium oxycoccos* (the cranberry), the rare *Lysimachia thyrsiflora*, *Betula glutinosa*, *Eriophorum vaginatum*, *E. angustifolium*, *Calamagrostis lanceolata*, and abundance of *Lastræa spinulosa*, the young fronds of which had all been cut down by the late frost. This locality is so greatly altered by drainage, and also by the planting of a large number of Conifers, that the sphagnous peat ditches which afforded so congenial a home to that floral treasure *Scheuchzeria palustris* have well-nigh disappeared. Leaving the Carr a very pleasant walk upon the west bank of the river Swale produced *Thalictrum flavum*, *Ranunculus auricomus*, *Viola alba*, *V. hirta*, *V. riviniana*, *Saponaria officinalis*, *Cerastium arvense*, *Geranium pratense*, *Rubus plicatus*, *Poterium sanguisorba*, *Ribes rubrum*, *Sanicula europæa*, *Campanula latifolia*, *Myosotis palustris*, *Primula caulescens* (popularly known as the Oxlip), *Rumex aquaticus*, *Populus alba*, with its copious, far-extending, and very conspicuous white suckers, *Salix fragilis*, *S. alba*, *S. helix*, *S. viminalis*, *S. cinerea*, *Orchis morio*, *Allium scorodoprasum*, and *Gagea lutea*. In the river were dense masses of *Ranunculus fluitans*, with its long floating grass-like leaves, which in one place had accumulated a sand-bank sufficiently large to divert the course of the stream. *Lilium martagon* was seen in the wood below Asenby, a locality in which it has been naturalised for upwards of forty years. At the Sectional Meeting one of the members exhibited *Polygonatum officinale* (Solomon's Seal) from Baldersby Park, most probably an escape from cultivation; and another showed that pretty and interesting species *Paris quadrifolia*.

The Conchological Section, in the absence of all its officers, was represented by Mr. Wm. Nelson, Mr. W. Denison Roebuck, F.L.S., Mr. W. Hewett, etc., and the report was given by Mr. Nelson as follows:—Twenty-eight species had been taken during the day, of which eight were water shells, six slugs, and fourteen land shells. Of these the most interesting were *Pisidium pusillum*, *Planorbis spirorbis*, *Pl. contortus*, and *Arion minimus*, all of which were additions to the fauna of North-West York vice-county.

A vote of thanks passed to the Chairman on the motion of Messrs. Thrippleton and Hemingway concluded the meeting.—

E.R.W.

Naturalist,

ICTERINE WARBLER AT EASINGTON IN HOLDERNESS: AN ADDITION TO THE YORKSHIRE AVIFAUNA.

JOHN CORDEAUX, M.B.O.U.,

Great Cotes, Ulceby, Lincolnshire.

I RECENTLY obtained from Mr. Philip Loten, of Easington, the skins of six small birds brought in by the village boys, at various times during the spring, either such as had been found dead or killed with stones or catapults; amongst them is a fine adult male of *Hypolais icterina*, obtained on May 28th, which Mr. Loten skinned at the time, thinking it might be a Wood Wren, but with grave doubts on the subject. This is the first Yorkshire example recorded of this continental species; three (two in England and one in Ireland) are mentioned as occurring between 1848 and 1889, by Mr. Howard Saunders in his 'Manual of British Birds,' and in the appendix to that work, mention is made of another, an adult male, obtained at Newcastle-on-Tyne on June 20th, 1889. The Icterine Warbler is also supposed to have been heard and seen in county Wicklow and in Pembrokeshire in May, 1886 (Zool., 1886, pp. 333-4).

The song of this charming warbler is so rich, loud and varied, that it is scarcely probable it would long escape notice should an example at any time wander to this country, and take up its abode in garden or park.

The Easington bird was sent to my friend, Mr. Wm. Eagle Clarke, of the Science and Art Museum, Edinburgh, and has subsequently been purchased for that Museum.

7th July, 1891.

NOTE—BOTANY.

Malham Plants.—I notice that in the report of the Y.N.U. excursion to Malham and Gordale last September (Nat., June, 1891, pp. 177), *Cochlearia anglica* and *Carduus acaulis* are mentioned, as having been seen during the excursion. The former is entirely a *littoral* plant, occurring on muddy seashores, (N. to Moray on the W. coast), and the Malham plant was probably *C. alpina*, which is there abundant. If *C. anglica* occurs in W. Yorks. at all, it would most probably be on the muddy river banks, under tidal influence, near Goole. If the record for *Carduus acaulis* is correct, it is a great extension of the plant's range in W. Yorks., it previously having been reported from the extreme S. of the Riding, in that limited area judged by Mr. Lees to belong to Watson's Zone 1. As the species is now known to occur in N.E. Yorks., however, it *may* occur as far N. as Malham. Was not *Carlina* the plant intended? This is most abundant there, and was not mentioned in the list.

The occurrence of *Cuscuta europæa* at Malham is very interesting, confirming the occurrence of the plant in Mid-West Yorkshire. This species generally occurs in much warmer localities and at much lower altitudes.—W. WEST, Junr., Bradford, 18th July, 1891.

EARLY NOTICE OF THE PINK-FOOTED GOOSE IN YORKSHIRE.

Rev. H. A. MACPHERSON, M.A., M.B.O.U., Etc.,
Author of 'An Introduction to the Study of British Birds,' etc.

Readers of 'The Naturalist' will remember that the Pink-footed Goose (*Anser brachyrhynchus*) was first recorded as a British species by Mr. Bartlett in 1839. It may interest them, therefore, to learn that this bird was reported to Ray as the common wild goose of Yorkshire in the seventeenth century, though there is apparently a confusion in the text between two species. It will be seen that Ray himself draws attention to the discrepancy in the colour of the bill and feet, showing that he was fully alive to it.

Ray describes the Grey-lagg Goose:—'Rostrum à capite ad mediam fere partem nigrum, deinde subpurpureum, ipso etiam apice nigro. Pedes subpurpurei sive carnei coloris.'

He continues:—'In paludibus agri Eboracensis nidificant: ipsi & eorum Pulli Mense Maio pinguescunt & in deliciis habentur. Hactenus D. *Lister*, qui tamen hanc speciem ab Ansere fero vulgari nobis descripto diversam esse non sidentur affirmat, quoniam descriptiones in omnibus fere, excepto Rostri & pedum colore, conveniunt.'

I extract this from my note-book, not having now the original to consult, but the reference given is Syn. Meth. Av., p. 138, and I think the work was published after Ray's death, in 1713. It seems quite clear that Dr. Lister had described to Ray a true Pink-footed Goose, obtained in Yorkshire. But the species which *bred* in Yorkshire was, of course, the Grey-lag Goose.

NOTES AND NEWS.

We regret to announce the death of a noted North of England geologist, Mr. Daniel Mackintosh, F.G.S., which occurred at Chester on the 19th ultimo.

The Lecturer on Botany at the Liverpool University College (Mr. R. J. Harvey Gibson, M.A., F.L.S., F.R.S.E.), has a paper in the Journal of Botany for May 1891 (p. 120), illustrated by a plate, on the histology of *Polysiphonia fastigiata*.

Mr. Harvey Gibson also has a paper in the Journal of the Linnean Society (Botany, No. 193, May 1891) on the development of the sporangia in *Rhodochorton rothii* and *R. floridulum*, and describes a new species belonging to that genus.

One of the ceremonies in the Senate House at Cambridge on June 16th was the installation of the Rt. Hon. Lord Walsingham as High Steward of the University. Subsequently, the degree of Doctor in Law was conferred upon the newly-elected officer *honoris causâ*. Lord Walsingham is an ex-President of the Yorkshire Naturalists' Union, and is well known, not only as a popular landlord and a 'crack shot,' but as a distinguished entomologist and Fellow of the Royal Society.

ADDITIONS TO THE FRESHWATER ALGÆ OF WEST YORKSHIRE.

WM. WEST, F.L.S.,

Lecturer on Botany and Materia Medica at the Bradford Technical College.

THE following list has been gradually accumulating since the publication of the last list of additions and is the result of the examination of a very large number of gatherings. I have been most ably assisted in the work by the keen judgment and knowledge of my son, G. S. West, who has also helped in the collection of the material, several lots of which, such as that from Whernside and Moughton Fell, have been collected by him alone. The Penyghent gatherings were in the Ribble drainage area. Many new localities are given for species previously recorded, and there are seventy additional species and varieties (before each of which is placed an asterisk) to those hitherto enumerated for the Riding. The total number of Algæ now on record for West Yorkshire is 540 species and 37 varieties and forms.

CLASS—FLORIDEÆ.

ORDER—SQUAMARIACEÆ.

Hildenbrandtia rivularis (Liebm.) J. Ag. On stones in rill, near Rawdon; H. T. Soppitt. Small dark red patches on the surface of dripping rocks, Shipley Glen; Gordale.

ORDER—HELMINTHOCLADIEÆ.

Batrachospermum vagum (Roth.) Ag. *VAR. **keratophytum** Bory. On stones in running stream, Horton-in-Ribblesdale.

Chantransia pygmæa Kütz. In a similar locality to the last, but not with it.

CLASS—CONFERVOIDEÆ HETEROGAMEÆ.

ORDER—ŒDOGONIACEÆ.

***Œdogonium itzigsohnii** DeBary. Ingleborough.

***Œdogonium delicatulum** Kütz. Askern.

CLASS—CONFERVOIDEÆ ISOGAMEÆ.

ORDER—CONFERVACEÆ.

Cladophora glomerata (Linn.) Kütz. Moughton Fell; Holden Gill, near Keighley.

August 1891.

***Cladophora flavescens** Ag. Rawcliffe Common.

Stigeoclonium fastigiatum Kütz. Still waters of a spring, Moughton Fell.

Draparnaldia plumosa Ag. *Var. **pulchella** Kütz. Penyghent.

Chaetophora pisiformis (Roth.) Ag. Rawcliffe; Askern.

Order—CHROOLEPIDEÆ.

Trentepohlia aurea (Linn.) Mart. [*Chroolepus aureus* (Linn.) Kütz.] Moughton Fell.

Microthamnion vexator Cooke. Greetland near Halifax.

Class—CONJUGATEÆ.

Order—MESOCARPEÆ.

Many examples have been observed from various localities, but could not be determined as they were not in conjugation.

Order—ZYGNEMACEÆ.

***Zygnema insigne** (Hass.) Kütz. Long. cell. veget. 37—95 μ; lat. cell. veget. 23·5—25 μ; diam. zygosp. 28—33 μ. Abundantly in fruit from Malham.

Sirogonium sticticum (Eng. Bot.) Kütz. Ingleton.

Order—DESMIDIACEÆ.

Gonatozygon brebissonii DeBary. Malham Tarn.

***Gonatozygon kinahani** Arch. Lat. 11—12 μ; 14—20 longius quam latum. Malham Tarn; Penyghent.

Sphærozosma vertebratum Ralfs. *Forma **minor.** Long. 9—10 μ; lat. 13·5—14 μ; lat. isthm. 7·5 μ. Malham Tarn.

Sphærozosma excavatum Ralfs. Penyghent; Ribblehead.

Hyalotheca dissiliens (Sm.) Bréb. Greetland near Halifax.

Pleurotænium truncatum (Bréb.) Näg. Rawcliffe Common.

Closterium obtusum Bréb. Greetland, near Halifax.

Closterium acerosum (Schrank) Ehrnb. Rawcliffe Common.

Closterium lanceolatum Kütz. Moughton Fell; Penyghent.

***Closterium prælongum** Bréb. Forma **brevior** Nord. ('Freshw. Alg. of New Zeal. and Austr.,' p. 68, pl. 3, fig. 22-24). Rawcliffe Common.

Closterium ehrenbergii Meneg. Moughton Fell; Askern.

Closterium moniliferum Ehrnb. Moughton Fell; Askern; Ribblehead; Malham Tarn.

Closterium leibleinii Kütz. Moughton Fell; Askern; Rawcliffe Common.

Closterium dianæ Ehrnb. Moughton Fell; Malham Tarn; Rawcliffe Common; Askern.

Closterium venus Kütz. Rawcliffe Common.

Closterium striolatum Greetland near Halifax.

Closterium rostratum Ehrnb. Greetland near Halifax.

Closterium setaceum Ehrnb. Rawcliffe Common.

Closterium cornu Ehrnb. Moughton Fell; Greetland near Halifax.

*__Closterium pronum__ Bréb. Rawcliffe Common.

Penium oblongum DeBary. Whernside; Greetland near Halifax.

Penium truncatum Bréb. *Forma **punctata.** Forma membrana distincte punctata. Leeming; Greetland near Halifax.

Cylindrocystis diplospora Lund. Whernside.

Cylindrocystis crassa DeBary. Moughton Fell.

Tetmemorus brebissonii Ralfs. *Var. γ (DeBary) Archer. Penyghent.

Tetmemorus granulatus Ralfs. Rawcliffe Common; Greetland near Halifax.

Euastrum verrucosum Ehrnb. Rawcliffe Common.

Euastrum oblongum Grev. Rawcliffe Common.

Euastrum pectinatum Bréb. Malham Tarn.

Euastrum elegans Bréb. Malham Tarn.

Euastrum binale (Turp.) Ralfs. Ribblehead.

Cosmarium hammeri Reinsch. *Forma **rotundata** (Wille) Boldt. (Desm. Gronl., p. 14). [Syn. *C. homalodermum* Nord. var. *rotundatum* Wille. (Nov. Seml. Alg., p. 36, tab. xii, fig. 18).] Malham Tarn.

Cosmarium anceps Lund. Baildon.

*__Cosmarium granatum__ Bréb. Malham Tarn; Baildon.

*Var. **subgranatum** Nord. Baildon.

Cosmarium cucumis Corda. Moughton Fell.

Cosmarium pyramidatum Bréb. Moughton Fell; Saltaire.

Cosmarium pseudopyramidatum Lund. Malham Tarn.

*__Cosmarium galeritum__ Nord. Malham Tarn.

*__Cosmarium phaseolus__ Bréb. Malham Tarn. Long. 20 μ; lat. 19 μ; lat. isthm. 4 μ.

*Cosmarium scenedesmus Delp. Malham Tarn. Long. 34 μ; lat. 41 μ; lat. isthm. 14 μ; crass. 16 μ.

Cosmarium bioculatum Bréb. Malham Tarn; Halifax.

Cosmarium tinctum Ralfs. Ribblehead.

*Cosmarium aspherosporum Nord. Penyghent.

Cosmarium meneghinii Bréb. Malham Tarn; Doncaster.

*Cosmarium substriatum Nord. in Nord. and Wittr., Alg. Exsic., No. 977. Rawcliffe Common.

Cosmarium crenatum Ralfs. Malham Tarn.

Cosmarium undulatum Corda. Rawcliffe Common; Malham Tarn.

Cosmarium tetraophthalmum (Kütz.) Bréb. Malham Tarn.

*Cosmarium conspersum Ralfs. Malham Tarn.

Cosmarium margaritiferum (Turp.) Meneg. Malham Tarn.

Cosmarium punctulatum Bréb. Rawcliffe Common; Malham Tarn; Halifax.

Cosmarium botrytis Meneg. Common; seen from numerous additional localities.

*Cosmarium præmorsum Bréb. Eldwick.

*Cosmarium turpinii Bréb. VAR. **lundellii** Gutw. [Syn. *C. turpinii* Bréb. forma Lund. (Desm. Suec., p. 29, tab. iii., fig. 9)]. Malham Tarn. Long. 60—63 μ; lat. 50—55 μ; lat. isthm. 15—16 μ; crass. 28 μ.

Cosmarium broomeii Thw. Moughton Fell.

*Cosmarium eboracense West. Baildon.

Cosmarium ochthodes Nord. Moughton Fell; Rawcliffe Common; Malham Tarn.

*VAR **subcirculare** Wille (Bidrag til kundsk. om Norges Ferskv. Alg., p. 26, tab. i., fig. 8). Baildon.

*Cosmarium boeckii Wille. Malham Tarn.

*Cosmarium commissurale Bréb. Rawcliffe Common.

*Cosmarium speciosum Lund. VAR. **simplex** Nord. forma **intermedia** Wille. Woolley.

Cosmarium moniliforme Ralfs. Penyghent.

Cosmarium cucurbita Bréb. Whernside (c. zygosp.) Zygosporæ globosæ, glabræ.

Cosmarium thwaitesii Ralfs. Whernside.

*Cosmarium curtum Bréb. Penyghent.

Arthrodesmus incus *FORMA **divergens** Arch. Penyghent; Greetland near Halifax (cum. zygosp.).

Staurastrum dejectum Ralfs. Malham Tarn; Ribblehead.

*Forma **punctata.** Membrana distincte punctata. Adel Bog.

***Staurastrum brevispinum** Bréb. Long. 35—40 μ; lat. 30—34 μ; lat. isthm. 15—18 μ. Malham Tarn.

Staurastrum cuspidatum Bréb. *Var. **maximum** nov. var. Var. multum major quam forma typica, spinis robustioribus et isthmo latiore. Long. 39—43 μ; lat. sine spin. 25—30 μ; lat. cum spin. 56—62 μ; lat. isthm. 9—10 μ. Malham Tarn.

***Staurastrum lunatum** Ralfs. Long. 21 μ; lat. 21 μ; lat. isthm. 7 μ. Malham Tarn.

***Staurastrum avicula** Bréb. Long. 34—36 μ; lat. sine spin. 35—40 μ; lat. cum spin. 42—47 μ; lat. isthm. 17—19 μ. Penyghent; Malham Tarn.

***Staurastrum aciculiferum** (West) Anders. (Sver. Chloroph. I., p. 11, fig. 4). [Syn *S. avicula* Bréb. var. *aciculiferum* West. ('Freshw. Alg. of N. Yorks.', p. 293, tab. 291, fig. 12).] Penyghent; Whernside.

Staurastrum pygmæum Bréb. Malham Tarn.

Staurastrum punctulatum Bréb. Rawcliffe Common; Malham Tarn; Halifax.

Staurastrum tricorne (Bréb.) Menegh. Ribblehead; Malham Tarn.

***Staurastrum inflexum** Bréb. Malham Tarn.

Staurastrum polymorphum Bréb. Rawcliffe Common; Malham Tarn.

Staurastrum gracile Ralfs. Malham Tarn.

Staurastrum paradoxum Meyen. Ribblehead.

Staurastrum margaritaceum Menegh. Rawcliffe Common; Ribblehead.

Class—MULTINUCLEATEÆ.

Order—SIPHONEÆ.

Vaucheria sessilis (Vauch.) D.C. Whernside.

Class—COENOBIEÆ.

Order—VOLVOCINEÆ.

***Eudorina elegans** Ehrnb. Goole.

Order—PANDORINEÆ.

Pandorina morum (Muller?) Bory. Goole; Askern.

ORDER—PEDIASTREÆ.

Pediastrum angulosum Ehrnb. Ribblehead; Malham Tarn.
Pediastrum boryanum (Turp.) Menegh. Doncaster.
Pediastrum tetras (Ehrnb.) Ralfs. Ribblehead.

ORDER—SORASTREÆ.

Cœlastrum microporum Näg. Malham Tarn.

CLASS—PROTOCOCCOIDEÆ.

ORDER—EREMOBIEÆ.

Hydrianum heteromorphum Reinsch. Malham Tarn; Greetland near Halifax.

ORDER—PROTOCOCCACEÆ.

Chlorococcum gigas (Kütz.) Grun. Malham Tarn.
*__Tetraspora lubrica__ (Roth.) Ag. Greetland near Halifax.
Scenedesmus acutus Meyen. Malham Tarn.
VAR. **obliquus** Rabh. Moughton Fell.
Scenedesmus quadricauda Bréb. Ribblehead; Malham Tarn; Doncaster.

CLASS—CYANOPHYCEÆ.

SUB-CLASS—NOSTOCHINEÆ.

ORDER—NOSTOCACEÆ.

*__Nostoc macrosporum__ Menegh. Heseltine Gill.
Nostoc muscorum Ag. Heseltine Gill.

ORDER—OSCILLARIACEÆ.

Oscillaria limosa Ag. Moughton Fell; Peel Park, Bradford.
*__Oscillaria antliaria__ Jurg. Baildon.
*__Symploca ralfsiana__ Kütz. Diam. trichom. 3·5—5 μ. Frizinghall.

SUB-CLASS—CHROOCOCCACEÆ.

ORDER—CHROOCOCCACEÆ.

Chroococcus turgidus Näg. Whernside.
Merismopedia glauca Näg. Mirfield; Greetland near Halifax.

CLASS—DIATOMACEÆ.

ORDER—DIATOMEÆ.

Cyclotella kützingiana Thw. Moughton Fell; Horton near Bradford.
*__Cyclotella meneghiniana__ Kütz. Baildon.

Melosira varians Greg. Holden Gill, near Keighley; Peel Park, Bradford; Manningham Park.

Surirella linearis Sm. Greetland near Halifax.

Surirella panduriformis Sm. Allerton.

*__Surirella ovalis__ Bréb. Saltaire; Goole.

Surirella ovata Turp. Bingley.

Surirella minuta Bréb. Baildon; Bingley; Goole.

Surirella pinnata Sm. Bingley; Adel Bog.

Cymatopleura solea Sm. Moughton Fell; Penyghent; Whernside.

*__Epithemia sorex__ Kütz. Malham Tarn.

Epithemia gibba (Ehrnb.) Kütz. Baildon; Adel Bog; Malham Tarn.

*__Epithemia ventricosa__ Kütz. Moughton Fell.

Himantidium arcus Sm. Penyghent.

Himantidium undulatum Sm. Whernside.

Himantidium gracile Ehrnb. Kildwick; Greetland near Halifax.

Ceratoneis arcus (Ehrnb.) Kütz. Whernside; Holden Gill near Keighley.

*__Ceratoneis amphioxys__ Rabh. Calfbeck, Howgill Fells.

Cymbella cuspidata Kütz. Adel Bog; Rombalds Moor; Greetland near Halifax.

Cocconema lanceolatum Ehrnb. Moughton Fell; Baildon; Holden Gill near Keighley.

Cocconema cymbiforme (Kütz.) Ehrnb. Moughton Fell; Baildon; Woolley.

Cocconema cistula Hempr. Moughton Fell; Peel Park, Bradford; Manningham Park.

Cocconema parvum Sm. Baildon; Peel Park, Bradford; Bingley.

Encyonema prostratum (Berk.) Ralfs. Moughton Fell; Peel Park, Bradford; Horton near Bradford.

Encyonema cæspitosum Kütz. Allerton; Malham Tarn; Rombalds' Moor; Manningham Park; Bingley; Mirfield; Horton near Bradford.

*__Encyonema gracile__ Rabh. Cullingworth.

Amphora ovalis Kütz. Doncaster; Moughton Fell.

Cocconeis pediculus Ehrnb. Abundant on *Cladophora glomerata*. Holden Gill near Keighley.

Cocconeis placentula Ehrnb. Moughton Fell; Baildon; Malham Tarn.

FORMA **perpusilla** Rabh. Baildon.

Cocconeis thwaitesii Sm. Bingley.

Achnanthidium microcephalum Kütz. Baildon.

*__Achnanthidium lanceolatum__ Bréb. Baildon; Cullingworth; Whernside; Woolley; Elslack.

*__Achnanthidium coarctatum__ Bréb. Bingley.

Achnanthes exilis Kütz. Malham Tarn; Baildon; Mirfield; Cullingworth.

*__Denticula obtusa__ Sm. Bingley; Holden Gill near Keighley.

*__Denticula sinuata__ Sm. Baildon.

Odontidium hiemale (Lyngb.) Kütz. Greetland near Halifax.

Odontidium mesodon Kütz. Whernside; Holden Gill near Keighley; Calfbeck, Howgill Fells.

Odontidium mutabile Sm. Baildon; Holden Gill near Keighley.

Fragilaria capucina Sm. Holden Gill near Keighley; Manningham Park.

Diatoma elongatum Ag. Holden Gill near Keighley.

Synedra lunaris Ehrnb. Mirfield; Elslack.

Synedra longissima Sm. Rombalds' Moor.

*__Synedra pulchella__ Kütz. Baildon; Bingley; Whernside.

*__Synedra acicularis__ Sm. Mirfield.

*__Synedra vaucheriæ__ Kütz. Mirfield; Allerton.

Synedra ulna Ehrnb. Holden Gill near Keighley; Mirfield; Morley; Peel Park, Bradford.

Synedra splendens Kütz. Peel Park, Bradford; Manningham Park; Elslack; Wooley.

*__Synedra acus__ Kütz. Greetland near Halifax.

Asterionella formosa Hass. Penyghent; Holden Gill near Keighley; Greetland near Halifax.

Nitzschia amphioxys (Ehrnb.) Sm. Shipley; Peel Park, Bradford; Baildon.

Nitzschia constricta (Kütz.) Pritch. [Syn. *N. dubia* Sm.].

FORMA **minor** Rabh. Baildon.

*__Nitzschia parvula__ Sm. Doncaster.

Nitzschia sigmoidea (Nitzsch) Sm. Doncaster; Whernside.

*__Nitzschia curvula__ (Ehrnb.) Sm. Allerton; Cullingworth; Adel Bog.

Nitzschia linearis (Ag.) Sm. Holden Gill near Keighley; Baildon; Doncaster; Woolley.

Nitzschia tenuis Sm. Moughton Fell; Doncaster.

Nitzschia minutissima Sm. Baildon; Malham Tarn.

*__Nitzschia communis__ Rabh. Allerton.

*__Nitzschia palea__ (Kütz.) Sm. Allerton.

Nitzschia acicularis Sm. Mirfield; Adel Bog.

Navicula cuspidata Kütz. Moughton Fell.

Navicula rhomboides Ehrnb. Moughton Fell; Peel Park, Bradford; Morley; Greetland near Halifax.

Navicula inflata Kütz. Allerton.

Navicula elliptica Kütz. [Syn. *N. ovalis* Sm.]. Baildon.

*__Navicula sphærophora__ Kütz. Doncaster.

*__Navicula dirhynchus__ Ehrnb. Adel Bog; Malham Tarn; Morley.

Navicula rhynchocephala Kütz. Greetland near Halifax.

Navicula affinis Ehrnb. Moughton Fell; Horton near Bradford; Peel Park, Bradford; Rombalds' Moor.

Navicula amphirhynchus Ehrnb. Adel Bog; Cullingworth.

*__Navicula exilis__ (Kütz.) Grun. Cullingworth; Doncaster; Baildon; Woolley.

Navicula angustata Sm. Moughton Fell; Bingley; Doncaster; Greetland near Halifax

Navicula cryptocephala Kütz. Moughton Fell.

Navicula dicephala Ehrnb. Allerton; Whernside; Halifax.

*__Navicula binodis__ Ehrnb. Baildon; Rombalds' Moor.

Pinnularia nobilis Ehrnb. Eldwick; Moughton Fell.

Pinnularia major Rabh. Malham Tarn.

Pinnularia viridis (Ehrnb.) Rabh. Manningham Park; Malham Tarn; Greetland near Halifax.

Pinnularia oblonga (Kütz.) Rabh. Baildon; Peel Park.

*__Pinnularia peregrina__ Ehrnb. Allerton; Goole.

Pinnularia radiosa (Kütz.) Rabh. Moughton Fell; Baildon; Mirfield; Morley; Elslack; Malham Tarn; Greetland near Halifax.

*__Pinnularia dactylus__ Ehrnb. Wigton Moor.

*__Pinnularia acuminata__ Sm. Adel Bog.

Pinnularia brebissonii (Kütz.) Rabh. [Syn. *P. stauroneiformis* Sm.]. Cullingworth; Manningham Park; Adel Bog.

*__Pleurosigma attenuatum__ (Kütz.) Sm. Manningham Park.

Pleurosigma acuminatum (Kütz.) Grun. VAR. **lacustre** (Sm.) Rabh. [Syn. *P. lacustre* Sm.]. Manningham Park; Malham Tarn.

Pleurosigma spencerii Sm. Doncaster.

Stauroneis phœnicenteron (Nitzsch.) Ehrnb. Malham Tarn.

Pleurostaurum legumen (Ehrnb.) Rabh. [Syn. *Stauroneis linearis* Sm.]. Baildon.

Gomphonema capitatum Ehrnb. Bingley; Malham Tarn.

Gomphonema constrictum Ehrnb. Holden Gill near Keighley.

Gomphonema geminatum Ag. Moughton Fell.

Gomphonema olivaceum (Lyngb.) Kütz. Malham Tarn.

***Gomphonema intricatum** Kütz. Baildon; Whernside; Morley; Goole; Elslack.

***Gomphonema fractum** Schum. Kildwick; Adel Bog; Cullingworth.

Gomphonema curvatum Kütz. Baildon; Manningham Park; Peel Park, Bradford.

Tabellaria fenestrata (Lyngb.) Kütz. Greetland near Halifax.

NOTE—ORNITHOLOGY.

The Chough in Yorkshire.—Mr. R. Lydekker says:—'The former existence of the Chough (*Pyrrhocorax graculus*) in Yorkshire is proved by an ulna from Kirkdale Cave, preserved in the British Museum.' (Ibis, July 1891, p. 385). This is an interesting instance of the Chough having formerly bred inland in England, as it still does in Navarre, and, no doubt, elsewhere in North Spain.—H. A. MACPHERSON.

NOTES—BOTANY.

Chara vulgaris (L.) **var. longibracteata** (Kuetz.).—I found this in a small pond in the lane behind Middleton Church, Pickering, Yorkshire, in August 1886. —WALTER W. REEVES, London, June 5th, 1891.

Saxifraga oppositifolia at Moughton.—On July 8th last, while rambling over Moughton, near Settle, in company with Mr. F. J. Hanbury, we came across a small patch of *Saxifragra oppositifolia* Linn. still in full flower, at an elevation of about 1150 ft. So far as we know this locality has not been previously recorded, and the elevation is 450 ft. lower than the 'lowest descent,' as given in Lees' 'Flora of West Yorkshire,' p. 246.—R. F. & F. P. THOMPSON, Settle, July 1891.

NOTE—COLEOPTERA.

Pyropterus affinis near Doncaster.—While in Wheatley Wood on the 23rd October last year, I collected several coleopterous larvæ from rotten wood. At the time they were quite unknown to me, but having been successful in rearing a few of them, which emerged May 16th to 18th, I am glad to be able to record them as *Pyropterus affinis* Payk., a beetle so 'extremely local' as to be considered somewhat of a rarity. I should say that they will be tolerably abundant at Wheatley during their season, but have not, unfortunately, owing to lack of time, been able to verify the opinion.—E. G. BAYFORD, Doncaster, 7th July, 1891.

BIBLIOGRAPHY:

Papers and Records published with respect to the Natural History and Physical Features of the North of England.

MAMMALIA, 1888.

THE intent of these bibliographical citations is to give a complete series of references to books, papers, and records which have been printed or published with regard to the ten northern English counties and the Isle of Man, and to indicate the gist of the contents of each in as concise a form as may be consistent with making these papers of interest and of value to persons engaged in geographical natural history work. In the case of long lists or papers, the very briefest indications only are given, reference to the original work or paper being necessary. In the case of short records, however, the convenience of the user of the bibliography necessitates the giving of fuller detail and the name of every species included, or even by giving the whole substance (destitute of verbiage) to obviate the necessity of further reference. No apology need be given for giving matter of this kind in 'The Naturalist'; it may not be of interest to casual readers, but to actual workers it will be of decided use.

The counties and vice-counties of which cognizance is taken in these references are the following, as named and numbered in the **Watsonian scheme**:—

53, Lincoln S.; 54, Lincoln N.; 56, Notts.; 57, Derby; 58, Cheshire; 59, Lancashire S.; 60, Lancashire W.; 61, York S.E.; 62, York N.E.; 63, York S.W.; 64, York Mid W.; 65, York N.W.; 66, Durham; 67, Northumberland S.; 68, Cheviotland; 69, Westmorland with Furness; 70. Cumberland; and 71, Isle of Man.

The present instalment of Bibliography has been compiled and edited by W. Denison Roebuck. Previous instalments of the Bibliography of this group of animals have appeared as follows:—

For 1884, in 'Naturalist,' February, 1885, pp. 152-156.
„ 1885, „ August, 1886, pp. 239-241.
„ 1886-7, „ April, 1889, pp. 115-127.

As is our custom, the purely sporting and hunting notes which occupy so much space in 'The Field' and similar journals, find no place here, save in those exceptional instances which involve some natural history fact of value or interest.

ANON. [not signed]. **York S.W.**

Yorkshire Dialects [words used in Calder Vale from Wakefield upwards: Brocks = badger (*Meles taxus*)]. Yorksh. Folk-Lore Journ., Pt. 1, Oct. 1885, 16.

ANON. [not signed]. **York N.E.**

Otters [*Lutra vulgaris*] **in the North** [are a pest in the Codbeck, threatening the entire destruction of the Trout]. Land and Water, March 19th, 1887, 275.

ANON. [not signed]. **Cheshire (Dee Estuary).**

A fine Specimen of the Mottled Seal [(?) caught in the Dee, near Flint Castle, probably attracted by the great number of Salmon now in the Dee]. Land and Water, June 4th, 1887, p. 513.

ANON. [not signed]. **Cumberland.**

A Rabbit [*Lepus cuniculus*] **caught with a Rod and Line** [in the Eden, a little below Eden Bridge, Wetheral]. Land and Water, July 30th, 1887, 47.

ANON. [not signed]. **Northb. S., Chevtld., York Mid W., S.E., Durh.**

List of . . . Donations to the Museum . . . of the Natural History Society [of Newcastle-on-Tyne], from June, 1877, to August, 1887[; in 1880, Water Vole (*Arvicola amphibia*) caught at Eshott near Felton (J. G. Fenwick); portion of skull of a horse (*Equus caballus*) found on the moors near Rothbury (Sir W. G. Armstrong); portion of skull of a Whale found on the rocks at Alnmouth, near Locke's Leap (G. H. Smart); 1884, Water Shrew (*Sorex fodiens*) caught in the Ouseburn Dene (R. Y. Green); 1885, Whiskered Bat (*Vespertilio mystacinus*) from Pateley Bridge (W. Storey) and from Pocklington (W. D. Roebuck); 1886, white Mole (*Talpa europea*) caught at Victoria, Garesfield Colliery, co. Durham (John Tucker); Antler of Red Deer (*Cervus elaphus*) from foundations of High Level Bridge, Newcastle (Mrs. J. Naylor); 1887, Weasel (*Mustela vulgaris*), Gosforth Park (— Jackson); Stoat (*M. ermnea*), Limestone Bank, Chesters (John Clayton); skeleton of a Chillingham Cow (*Bos taurus*), (Earl of Tankerville); and a full-grown male Grey Seal (*Halicherus gryphus*) picked up at sea off the coast near Seaham, 17th March, 1887 (purchased)]. Nat. Hist. Trans. of Northumbld., Durh. and Newc., vol. 9, part 2 (1888), pp. 274-276.

ANON. [not signed]. **Linc. N.**

Weasels [*Mustela vulgaris* **and** *M. ermina*] **for New Zealand** [a fourth consignment, 300 in number, collected by Mr. Allbones in North Lincolnshire, at average cost of 3s. 4d. each]. Field, Dec. 24th, 1887; Zool., Jan. 1888, 3rd Series, xii. 21.

ANON. [signed 'Ed. Field']. **Northumberland S.**

Large Hare [(*Lepus europæus*) killed near Morpeth, weighed 13¾ lbs.]. Field, Oct. 28th, 1876; rep. Field, Jan. 28th, 1888, p. 107.

ANON. [signed 'A.M.'] **Linc. S.**

[Sandy and White] Variety of the Water Vole [(*Arvicola amphibia*) at Essendine, S. Lincs., seen by writer about twelve years ago]. Field, Feb. 4th, 1888, p. 159.

ANON. [signed 'Lincoln Green']. **Linc. N.**

Martens [(*Martes sylvestris*) **have been frequently seen in Lincolnshire** since 1825, and reference to Cordeaux's papers given; affirmation and particulars of occurrence of true Wild Cat (*Felis catus*) near Bullington Wood, Wragby, in 1883; both notes in correction of M. G. Watkins' note]. Field, Feb. 18th, 1888, p. 220.

ANON. [signed 'L.']. **Westmorland.**

Early Leverets [(*Lepus europæus*); two, a fortnight old, found near Kendal about the end of January 1888]. Field, Feb. 25th, 1888, p. 248.

ANON. [not signed]. **York S.W.**

The Yorkshire Naturalists' Union at Hatfield Chace [Sep. 21st, 1887; *Mustela putorius* exhibited at the meeting, a local capture]. Nat., March 1888, p. 84.

ANON. [not signed]. **Derbyshire.**

The Snow in Yorkshire and Derbyshire [driving Hares (*Lepus europæus*) to farm-yards in Derbyshire for food]. Field, March 3rd, 1888, p. 287.

ANON. [signed 'R.B.L.']. **Westmorland.**

Run by a Single Hound [after a Fox (*Vulpes vulgaris*) on the fells near Kendal, Feb. 1888; details given]. Field, March 3rd, 1888, p. 290.

ANON. [not signed]. **York S.E.**

Capture of a Whale on the Flamborough Rocks [on March 13th; measurements given, species not stated]. Land and Water, March 17th, 1888, p. 279.

ANON. [signed 'Snaid']. **York S.W.**

Penistone Harriers [an old pack, dates as far back as 1260; historical particulars given]. Field, April 7th, 1888, p. 473.

ANON. [not signed]. **Lanc. S., Cheshire.**

Liverpool Science Students' Association [at Ince Blundell, July 14th, 1888; peat-beds at mouth of Alt and at Leasowe have yielded bones of *Cervus elaphus*, *Bos taurus*, *B. longifrons*, *Equus* and *Urus*]. Research, Aug. 1888, 31.

ANON. [not signed]. **Westmorland.**

Field-Meeting of the Kendal Natural History Society [at Longsleddale, one of the few existing haunts of *Martes sylvestris*, but none were seen]. Westm. Note Book and Nat. Hist. Record, vol. 1, part 3, Sep. 1888, p. 65.

ANON. [not signed]. **Northumberland S.**

Whales and . . . in British Waters [on Aug. 30th a Whale, about 20 ft. in length, seen off Newcastle, but not caught]. Field, Sep. 15th, 1888, p. 402.

ANON. [not signed]. **Cheviotland.**

Chillingham Wild Cattle [account of their being crossed with shorthorns]. Field, Dec. 8th, 1888, p. 844.

J. BACKHOUSE, Jun. **Durham.**

The Carnivorous Propensities of the Squirrel [(*Sciurus vulgaris*), as noticed by J. E. Backhouse of Croft and Chas. Backhouse of Wolsingham]. Nat. Hist. Journ., May 15th, 1888, xii. 89.

MATTHEW BAILEY. **York S.E.**

Whale [Bottle-nose] at Flamborough [species not stated]. Nat., April 1888, p. 114.

MATTHEW BAILEY. **York S.E.**

Whale at Flamborough [described, but not named]. Nat., Sep. 1888, 263.

MATTHEW BAILEY. **York S.E.**

Whales off Flamborough [particulars given; probably some species of *Balænoptera*, in T. Southwell's opinion]. Nat., Nov. 1888, p. 331.

THOMAS BLOUNT. **York S.W., N.E., N.W., and Mid W.**

Blount's Yorkshire Tenures [at Aislaby, hare-dog; at Carlton-juxta-Rothwell, deer-hunting; at Elmsall, fox skin lined gloves; at Hutton Conyers, coney-warren; at Langwath, buck and doe; at Sheffield, greyhounds or hares]. Yorksh. Notes and Queries, part 11, April 1888, pp. 211-223.

THOMAS BLOUNT. **York N.E.**

Blount's Yorkshire Tenures [at Whitby, the well-known legend respecting the Wild Boar (*Sus scrofa ferus*)]. Yorksh. Notes and Queries, part 12, July 1888, pp. 228, etc.

W. D. BRAITHWAITE. **York S.W.**

[Supposed Badger (*Meles taxus*) **in Brockendale,** Aug. 21st, 1886]. Nat. Hist. Journ., Sep. 15th, 1886, p. 123.

MONTAGU BROWNE. **Linc. S.**

Notes on the Vertebrate Animals of Leicestershire [including the following species recorded for Belvoir, which may possibly be South Lincolnshire records:– *Mustela putorius* (p. 163); *Meles taxus* (167); albino *Talpa europæa* (214), *Mus minutus* (218); and *Muscardinus avellanarius* (219); the two latter negative records]. Zool., May and June 1885, pp. 163, 167, 214, 218, and 219.

T. BUNKER. **York S.W., Linc. N.**

Capture of a Seal [*Phoca vitulina*, presumably] in the Aire at Rawcliffe [early in 1888; particulars of capture given]. Nat., Aug. 1888, p. 226.

DIPTON BURN. **Cumberland.**

Stoats [*Mustela erminea*] **and Weasels** [*M. vulgaris*] **for Australia** [have been collected near Brampton to about four hundred in number, for exportation]. Sci. Goss, Aug. 1888, p. 191.

BASIL CARTER. **York N.W.**

Robin caught in a mouse-trap [set at Burton House, Masham, for Red Field Voles (*Arvicola glareolus*)]. Nat., Nov. 1888, p. 330.

JAMES CARTER. **York N.W.**

Food of the Otter [(*Lutra vulgaris*) in the Yore near Masham: fond of coarse fish and of crayfish; they do not feed on water rats, pheasants' eggs, nor mussels]. Field, April 21st, 1888, p. 547.

H. CHARBONNIER. **'Yorkshire.'**

[A 'Cross' between a Rabbit and a Hare (*Lepus cuniculus* and *L. timidus*), which had been lately shot in Yorkshire, exhibited March 1st, 1888]. Proc. Bristol Nat. Soc., New Series, Vol. 5, part 3, 1887-8, p. 373.

T. D. A. COCKERELL. **Cheviotland, Isle of Man.**

North of England Specimens in the British Collection at the British Museum [Manx Cat (*Felis catus*, var.), and *Halicherus gryphus* from the Farnes, P. J. Selby]. Nat., Aug. 1888, p. 227.

E. MAULE COLE. **York S.E.**

The Badger [*Meles taxus*] **on the Yorkshire Wolds** [at Fimber Nab; humorously worded account of captures from 1830 to 1880]. Nat., April 1888, p. 112.

T. A. COWARD. **Cheshire.**

The Whiskered Bat [*Vespertilio mystacinus*] **in Cheshire** [details of captures of five, and of one *Plecotus auritus* at Fernilee and Alderley Edge]. Zool., June 1888, 3rd Series, xii. 222.

WALTER CROUCH. **York S.E. and S.W., Linc. N.**

Notes on the Whale, Rudolphi's Rorqual (*Balænoptera borealis*, Lesson), and record of . . a Female Stranded in the Humber [near Goole, Sep. 1884; measurements given]. Essex Nat., April 1888, ii. 41-46.

N. F. DOBRÉE. **York S.E.**

Mammalian Remains [Rhinoceros and Elephant] at Kelsey Hill, Holderness. Nat., Nov. 1885, p. 378.

C. WOLLEY DOD. **Cheshire.**

Squirrels [*Sciurus vulgaris*] **and Yew Berries [at Edge Hall, Malpas;** squirrels are numerous, but Editor of Field thinks Hawfinches did the mischief to the Yews]. Field, Sep. 15th, 1888, p. 413.

W. FINCH, jun. **Notts.**

Bank Vole [*Arvicola glareolus*] **in Nottinghamshire** [not common; two instances given, with notes on habits]. Zool., Jan. 1888, 3rd Series, xii. 23.

F. R. FITZGERALD. **York Mid W.**

Bank Vole [*Arvicola glareolus*] **in Surrey and Yorkshire** [several times in the woods at Ripley and elsewhere near Harrogate]. Zool., Aug. 1888, 3rd Series, xii. 298.

F. GAYNER and B. S. ROWNTREE. **Lanc. S.**

A Day on the Southport sand-hills [June 9th, 1888; *Lepus cuniculus* extremely abundant]. Nat. Hist. Journ., Sep. 15th, 1888, xii. 122.

A. GRAVESON. **York N.E.**

Two Otters [*Lutra vulgaris*] **. . caught in the Cod Beck,** near Thirsk, just before Christmas [habits of one in confinement]. Nat. Hist. Journ., Feb. 15th, 1888, p. 23.

C. HARDWICK. **Lanc. S., York S.W., etc.**

Spectre Huntsman and Hounds [and White Doe Legends. at Cliviger Gorge, Rothwell Haigh Common, etc.]. Yorksh. Folk-Lore Journ., Part 11, April 1888, pp. 200-207.

R. P. HARPER. **York N.E.**

Bank Vole [*Arvicola glareolus*] **in Yorkshire** [one found dead on the Cliffs near Scarborough]. Zool., Jan. 1888, 3rd Series, xii. 23.

J. E. HARTING. **Durham, Northumb., Lanc., York S.W., Cumberland, Linc. N., Derby.**

The Badger, Meles taxus [a résumé of what is known of its distribution and natural history; Brockholes, Lancs. and Yorksh., Brock-le-Bank, Cumberland, Brocklesby, Lincs.; distribution in Cumberland, Lincs., Yorksh., Derbyshire, Durham, Lancs., and Northumberland referred to]. Zool., Jan. 1888, 3rd Series, xii. 3 and 4.

J. E. HARTING. **Cheshire, Linc. N., York Mid W., N.W., and S.E., Cumberland, Durham.**

The Whiskered Bat, Vespertilio mystacinus [a résumé of records as to natural history, distribution; Cheshire (Roebuck), Lincolnshire (Caton Haigh), Yorkshire (Roebuck), Durham (Bond), Cumberland (Macpherson), and Shotley Bridge (Mennell and Perkins), are mentioned with full details]. Zool., May 1888, 3rd series, xii. 161-166, and plate.

J. E. HARTING. **Cumberland.**

[**Pine Marten** (*Martes sylvestris*) **trapped in Cumberland**; exhibited to Linnean Society, April 5th, 1888]. Zool., May 1888, 3rd Series, xii. 194.

J. E. HARTING. **Linc. N.**

Change of Habit under altered Conditions of Life [exemplified by Rabbits (*Lepus cuniculus*) breeding above ground in the Humber marshes, fide Cordeaux]. Field, July 7th, 1888, p. 5.

G. E. HASTINGS. **Northumberland S.**

Some Summer Notes on Fish [and on a shoal of Porpoises (*Phocæna communis*) off Tynemouth; their habits, etc.]. Nat. Hist. Journ., March 15th, 1888, xii. 47.

G. E. HASTINGS. **York S.W.**

The Badgers [*Meles taxus*] **of Brockendale** [extracts from diary; habits of a specimen in confinement]. Nat. Hist. Journ., Nov. 1st, 1888, xii. 175-177.

G. E. HASTINGS. **York S.W.**

A Hedgehog [(*Erinaceus europæus*) **caught at Ackworth**; its habits]. Nat. Hist. Journ., Nov. 1st, 1888, xii. 180.

C. D. HEAD. **York N.E.**

Nest of Short-tailed Field Vole [(*Arvicola agrestis*) in a hole in a tree, about twelve inches from the ground; locality not stated, but note dated from Scarborough]. Sci. Goss., Aug. 1888, p. 191.

J. M. HICK. **Durham.**

Address to the Members of the Tyneside Naturalists' Field Club . . May 16th, 1887 [notes on field meetings; *Cervus elaphus* in Raby Park]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 10, part 1 (1888), p. 6.

ABRAHAM HOLROYD. **York S.W. and Mid W.**

Yorkshire Proverbs an' Speyks ['Better have a Mouse (*Mus musculus*) in the pot as nae flesh']. Yorksh. Folk-Lore Journ., Part 11, April 1888, p. 218.

W. R. HUGHES, Secretary. **Cheviotland, Cheshire, Lanc. S.**

[British Wild Cattle, being the] Report of the Committee, consisting of . . [ten names] . . and Mr. W. R. Hughes (Secretary), appointed for the purpose of preparing a Report on the Herds of Wild Cattle in Chartley Park,

and other Parks in Great Britain [giving detailed information upon the Chillingham and Lyme Park herds, with notices of those at Somerford Park near Congleton (Cheshire), and Middleton Park (Lancs.)]. Brit. Assoc., 57th Rep. (Manchester, 1887), 1888, pp. 135-145.

J. ISMAY. **York S.W.**

Some Account of the Parish of Mirfield (by Mr. Ismay), to a Friend in Cumberland. 1755 [Hares (*Lepus europæus*) mentioned in respect of sport; men and boys in Hopton employ themselves in the Christmas holidays in hunting the Squirrel (*Sciurus vulgaris*), which gives them violent exercise in the woods, and affords them excellent diversion]. Yorksh. Notes and Queries, Parts 10 and 11, Jan. and April 1888, pp. 207 and 211.

J. E. KELSALL. **Derbyshire, Notts.**

[Rhinolophus hipposideros in Derbyshire and Notts; details of localities; copied from Zool., March 1887]. Midl. Nat., April 1887, x. 105.

GERALD LASCELLES. **Cumberland.**

Chapter XII. Vermin [(p. 277) **the true Wild Cat** (*Felis catus*) 'still exists . . . in Cumberland']. Shooting, by . . . Walsingham and . . . Gallwey . . . 1886 [8vo, vol. i. p. 277].

W. J. LETALL. **York S.W.**

Rats [*Mus decumanus*] **and Weasels** [(*Mustela vulgaris*) **in combat,** in a brook near Whiston which flows into the Rother]. Nat. Hist. Journ., Nov. 15th, 1888, xii. 206.

JAS. EARDLEY MASON. **Linc. S.**

Otter [*Lutra vulgaris*] **in Lincolnshire** [found in Dunston Fen, Jan. 23rd, 1888]. Nat., March 1888, p. 82.

JAMES MUNRO. **Notts.**

The Roe Deer [a general article, in which incidental mention is made of an unsuccessful attempt made in 1873 to 1876 to establish *Cervus capreolus* on an estate in Notts]. Nat. Monthly, Oct. 1887, p. 35.

C. PARKINSON. **Cumberland.**

In the Valley of the Teme, Worcestershire. . . . No. 2.—The Lair of the Otter [with references to the eccentric distribution of this animal (*Lutra vulgaris*) in the Cumberland rivers; never found in Caldew, which is a tributary of Eden, famous for them]. Nat. Monthly, Jan. 1888, p. 89.

T. N. POSTLETHWAITE. **Cumb., Westm., Furness, York Mid W.**

Remains of Red-deer [*Cervus elaphus*] **in the Duddon [estuary**; horns dredged up; Editor refers to the deer of Bowland Forest and Martindale Fells]. Zool., April 1888, 3rd Series, xii. 138.

W. DENISON ROEBUCK. **Linc. S.**

Lincolnshire Bats [*Plecotus auritus* and *Vesperugo pipistrellus*, both young, taken in Gosberton Church, near Spalding, by J. W. Chandler]. Nat., Sept. 1888, p. 263.

W. DENISON ROEBUCK. **York Mid W.**

Water Shrew [*Crossopus fodiens*] **and Field Vole** [*Arvicola agrestis*] **near Ripon** [at North Stainley, in a hay-field; sent by Rev. R. A. Summerfield]. Nat., Sep. 1888, p. 263.

W. H. St. QUINTIN. **York N.E.**

The Preservation of Indigenous Animals [as instanced by readiness of *Vulpes vulgaris*, *Meles taxus* and *Lutra vulgaris* to avail themselves of the shelter afforded them on the Scampston Estate]. Field, Sep. 1st, 1888, 316.

BENJAMIN SCOTT. **Derbyshire.**

The Weasel and his Family [speaks of *Martes foina* and *M. abietum* 'being seldom seen in South Britain, except in the more mountainous parts of Wales and Derbyshire']. English Illust. Mag., Feb. 1888, p. 334.

T. SINGTON. **Lanc. W.**

[Exhibition of antler of *Cervus elaphus* and horn of *Bos longifrons*, from excavations for Preston Docks, to Manch. Lit. and Phil. Soc., Nov. 7th. 1887]. Mem. and Proc. Manch. Lit. and Phil. Soc., 4th Series, Vol. i, 1888, p. 17.

THOMAS SOUTHWELL. **Lanc. W., York Mid W.**

On the Winter Breeding of the Otter [(*Lutra vulgaris*); quoting occurrences of young ones on the river Cocker on July 26th, and on banks of Dunsup (Yorkshire), Nov. 17th]. Zool., July 1888, 3rd Series, xii. 250.

ABRAHAM STANSFIELD. **York S.W., Lanc. S.**

A Difficult Lancashire Place Name [Todmorden; the Tod=fox theory abandoned]. 16-page reprint from the 'Manchester Quarterly,' 1884. Not seen. Abstract in Yorksh. Notes and Queries, Part 13, Oct. 1888, Vol. 2, p. 53.

JAMES SUTTON. **Durham.**

Varieties of the Mole [*Talpa europea*] **in Durham** [a cream-coloured one nearly every year in one particular spot, in black peaty soil] Zool., Jan. 1888, 3rd Series, xii. 22.

JAMES SUTTON. **Durham.**

The Bank Vole [*Arvicola glareolus*] **in co. Durham** [near Durham city; instances of capture by trap given]. Zool., Jan. 1888, 3rd Series, xii. 23.

J. SUTTON. **Durham.**

Seasonal Change of Colour in the Stoat [(*Mustela erminea*) as observed near Durham]. Zool., May 1888, 3rd Series, xii. 183.

J. HORSFALL TURNER. **York N.E.**

Runswick [Folk-Lore; Roasted Mouse (*Mus musculus*) infallible in hooping-cough]. Yorksh. Folk-Lore Journ., Part 12, July 1888, p. 233.

J. HORSFALL TURNER. **York Mid W.**

Slight Sketch of the History of the Ancient Family of Routh [including references to the Forests of Knaresburgh, Wensleydale, and the delivery on 21st June, 47th Ed. 3rd, of a fat Buck (*Cervus dama*) from Knaresburgh Forest]. Yorkshire Genealogist, Part 12, July 1888, p. 235.

M. G. WATKINS. **Cumberland, Linc. S.**

Martens [discussing the decrease of *Mustela martes* in the Lake District (Wastwater and Borrowdale) and its probable occurrence in the Lincolnshire woodlands, where one was killed by hounds in 1825]. Field, Feb. 11th, 1888, p. 193.

JOHN WATSON. **Cumberland, Westmorland, Furness.**

The Extinct Animals of the Lake District [respecting the remains of mammals found in Bone-caves at Arnside, Whitbarrow Scaur, Helsfell, Long Sleddale, Silloth, and Ressondale, and also giving historical evidence; *Homo sapiens*, *Ursus* (two species), *Sus scrofa ferus*, *Canis lupus*, *Cervus elaphus*, *C. dama*, *C. capreolus*, *Castor fiber*, *Felis catus*, *Mustela*, *Bos taurus*, *B. primigenius*, *B. longifrons*, *Megaceros hibernicus*, *Equus*, and *Meles*; existence of *Castor fiber* and of *Ursus arctos* and *U. fossilis* gone into at length, the Lake District being one of the districts in which Bears were taken in Roman times; details of occurrence of *Bos primigenius* given at length; extracts from ancient documents of 1629 and 1675 as to wild cattle, red and fallow deer at Naworth; the Beaver, the Wild Boar, the Wolf, etc., treated of in similar manner]. Westm. Note Book and Nat. Hist. Record, Vol. 1, part 3, Sept. 1888, pp. 55-60.

S. HENRY WRIGHT. **Notts.**

Sherwood Forest [with details as to the Red Deer (*Cervus elaphus*), Fallow Deer (*Dama vulgaris*), Squirrel (*Sciurus vulgaris*), and Fox (*Vulpes vulgaris*]. Nat. Hist. Journ., Sep. 15th, 1886, pp. 113-117.

NOTES AND NEWS.

In the May number of the Annals and Magazine of Natural History, p. 418, Mr. Alfred O. Walker, formerly of Chester, has a note on *Pherusa fucicola* (Leach), a crustacean about which much confusion has arisen.

Several new exotic genera and species of Pyralidæ contained in the British Museum Collection are described by Mr. W. Warren, M.A., F.E.S., in the Annals and Magazine of Natural History for May.

In the 'Philosophical Magazine' for March 1889, Mr. Mellard Reade attempts to explain why granitic intrusions show so little evidence of contraction during consolidation and cooling. Such an intrusion being more or less of the nature of a laccolite in communication with some larger molten reservoir, the contraction on passing into the solid state is balanced by a further inflow of molten matter. When the granite is contracting by cooling after solidification, the weight of the overlying rocks is sufficient to prevent the mass from breaking up.

We have received from Mr. R. Howse, Curator of the Museum of the Natural History Society at Newcastle-on-Tyne, a copy of his Guide to the Collections of Local Fossils in the Museum, printed for the Society (62 pp. 8vo, Newcastle 1889). It consists essentially of very full fossil lists from the strata of Northumberland and Durham, the Carboniferous and Permian of course filling most of the work. The smaller fossils such as the entomostraca and foraminifera are not neglected; synonymy and references are given when necessary; and a few stratigraphical notes are inserted in their proper places. The catalogue seems to contain very few misprints for such a work, though in the section on p. 50 we note a curiously cabalistic word, apparently a type-setter's anagram on 'limestone-post.

Mr. J. J. Burton, of Nunthorpe, writes us that some time ago his boys were spending their summer holidays in the country near York, and found a rabbit's nest in which were several young. Two of these they took out and placed with some young kittens of about the same size in the box of a threshing machine which the cat had selected as the birth-place of her family. Strange to say, the old cat suckled the young rabbits for many weeks, when one of them died. The other rabbit lived until it was half grown, and was regularly nourished by its foster-mother, until one day late in autumn, when by some mischance a door at the bottom of the box, used for cleaning out the straw and refuse which gathers there when the machine is used, was left open, and the rabbit fell or jumped out, and was subsequently killed by one of the other cats kept at the farm.

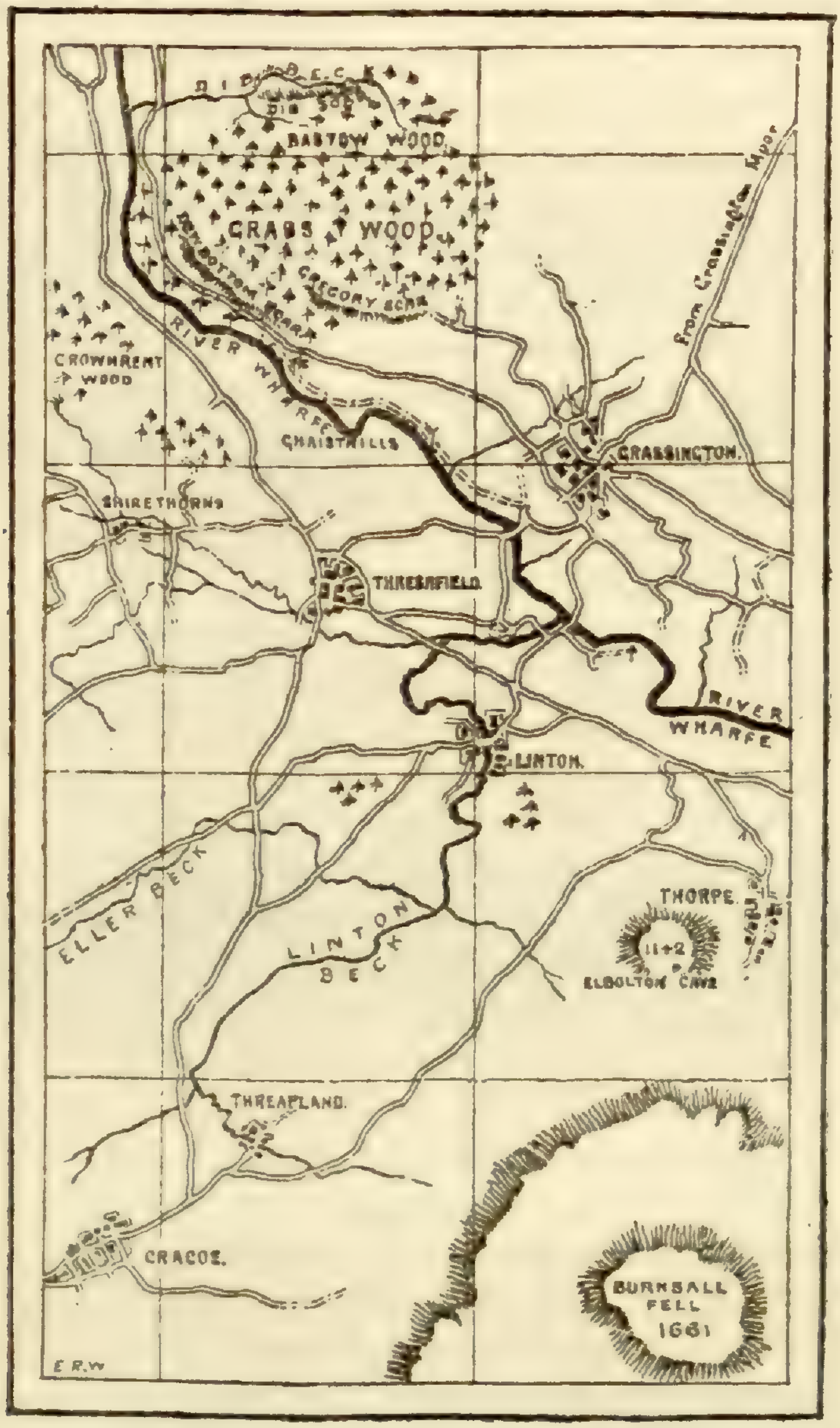
The Severn Valley Naturalists' Field Club, under the direction of their Secretary, the Rev. R. C. Wanstall, made a three days' visit to Yorkshire, from the 9th to the 12th of June, and to the number of between twenty and thirty, made the Queen Hotel, Harrogate, their headquarters. On Tuesday, the 9th, they visited Plumpton Rocks and Knaresborough under the guidance of Mr. Riley Fortune and Mr. Fred. Powell. The following day carriages conveyed the party to Ripley, Ripon, Studley, and Fountains, under the guidance of the Rev. W. T. Travis, Rev. J. S. Tute, and Mr. J. Emmet, and after dinner Dr. Olliver read a paper on the geology of Harrogate, with special reference to the mineral waters. Thursday, the 11th, was spent in Wharfedale, at Bolton Abbey, Ilkley, and Otley. On that day the Rev. E. P. Knubley and Mr. M. B. Slater conducted the party during the day; and in the evening the former gave a few notes on the general geological and physical features of the county, at the same time mentioning a few interesting facts in regard to the migration and distribution of one or two species of birds. Hearty votes of thanks were passed to Prof. Miall, and all who had guided the several expeditions, or assisted with the arrangements. On Friday, the 12th, the party returned to Shrewsbury.

THE YORKSHIRE NATURALISTS' UNION AT GRASSINGTON.

In 'The Buxton of Yorkshire' the Rev. Bailey J. Harker, F.R.Hist.S., writes:—'Supposing that your purpose, even if you can afford it, is not in your spring or summer holidays, to go to the Highlands, the Lakes of Killarney, the "English Switzerland" in the North-west, "bonnie Wales," the Continent, "the Land of the Midnight Sun," America, or Palestine, but to find your way to some English spot . . . I recommend you to go to Grassington-in-Upper Wharfedale.' If, then, Grassington is such an attractive spot—and so it certainly is—we cannot understand why Mr. Harker is not content to allow it to be known as Grassington, a far prettier name, to our mind, than 'The Buxton of Yorkshire.' But a rose would smell as sweet by any other name, and we trust that Grassington and its surroundings will long retain their wild and primitive beauty.

Grassington, then, was the place selected for the ninety-first meeting of the Yorkshire Naturalists' Union, which took place on Saturday, the 20th of June. The neighbourhood, with its fine woods, wild surroundings, and beautiful river, is always attractive to naturalists, and it is not surprising that the excursion was largely attended by members and their friends, many ladies also being present. No doubt the magnificently fine and sunny weather, not only of the day itself, but also of the preceding week, had no little to do with this. A small number of members, wishing to spend as much time in the district as possible, arrived on the ground the previous day, and had been some time at work when the main body appeared upon the scene. The members who availed themselves of the arrangements prepared for their conveyance, arrived at Skipton about half-past nine on Saturday morning, and were driven to Cracoe, and thence to Grassington. At the former place the geologists left the conveyances, and, under the guidance of Mr. R. H. Tiddeman, M.A., F.G.S., than whom, attached as he is to the Geological Survey of the district, no more efficient leader could be desired, investigated the country, and especially the reef-knolls about Cracoe and Thorpe. The interest of the members accompanying this party was amply evidenced by their attention to the explanations given, and by keeping well together and not being troubled by stragglers. Far different was the case with the members who devoted themselves to other branches of research. A party of naturalists bent upon active investigation cannot disperse too much over the district, and the members attending this excursion did their

duty well. Hardly a part of Grass Wood or the adjoining river-bank was left unexplored, and the result was that a considerable amount of excellent work was achieved. A few members availed themselves of the invitation of the Craven Naturalists' Association to visit Elbolton Cave and inspected the admirable work effected by the



Rev. Ed. Jones and his indefatigable colleagues. To the Craven Naturalists' Association much credit is due for assisting the honorary secretaries in the preparation of the arrangements for the excursion, and the Union was favoured as usual by the landowners of the district granting the members every facility for the investigation of their estates.

The members who confined their attention to the woods had certainly, so far as mere comfort goes, the most enjoyable time of it, for the excursion was conducted under continuous broiling sunshine; and this, on the day preceding the longest day of the year, was about noon almost unbearable. About four o'clock the inhabitants of the quiet little village of Grassington began to flock to their windows and doors to see the visitors invade their domain. Bearing unmistakeable traces of the limestone nature of the district, they at length assembled in Grassington House to the number of between 70 and 80, and after a most acceptable wash sat down in the spacious rooms to the good fare provided. After tea the party, influenced by the beautiful weather, moved into the gardens attached to Grassington House, and there conducted the business of the meetings under the shade of the trees, in true naturalists' fashion. The Sectional Meetings were first held, at which notes were compared and the reports prepared for presentation to the General Meeting, which opened at 5.30 under the chairmanship of Mr. G. T. Porritt, F.L.S., President of the Entomological Section. Amid beautiful surroundings it is scarcely advisable to submit members to too much formality in the way of meetings, and the proposition that 'the minutes of the previous meeting be taken as read' was unanimously acceded to.

The following ladies and gentlemen whose names had been duly proposed and seconded were elected, viz.: the Misses Rachel Ford Thompson and Frances Phillips Thompson, Settle; Mrs. A. H. Pawson, Farnley; and Messrs. J. J. Burton, Nunthorpe; E. D. Doncaster, Sheffield; Wm. Mansbridge, Horsforth; Adam Millward, Harrogate; and Rudolph Rosenstock, B.A., Huddersfield. It is usually and naturally expected that several new members, from the district in which an excursion is held, will be admitted into the Union, but it is to be regretted that such was not the case with regard to the Grassington excursion, not a single new member from the immediate district being proposed.

The Societies represented on the excursion included Liversedge, Leeds (2), York, Dewsbury, Malton, Halifax, Harrogate, Thirsk, Craven, Leyburn, Scarborough, Huddersfield, Cleveland, and the Conchological Society.

A vote of thanks was accorded to the Duke of Devonshire, Messrs. James Lambert, N. H. Kelsall, R. Procter, and W. A. Procter for permission granted to visit their respective estates, and to Messrs. R. H. Tiddeman, M.A., F.G.S, L. Rotheray, and H. T. Soppitt for leading parties, or contributing to the excursion-programme, on the proposition of the Mayor of Halifax, seconded by Mr. B. Holgate, F.G.S.

The Reports of the several Sections were presented, and the following accounts have been supplied for publication.

For the Vertebrate Section Mr. Riley Fortune, F.Z.S., supplies the following report :—The Section was well attended, and included its President, Mr. James Backhouse, F.Z.S.; one of its Hon. Secretaries, Mr. Riley Fortune, F.Z.S.; Messrs. Edgar R. Waite, F.L.S., H. Whitaker, J. Braim, and others. The excursion, so far as the Vertebrate Section was concerned, was very successful, the only drawback being the weather, which was excessively hot. Birds were very plentiful, Wood Warblers and Garden Warblers especially being abundant in Grass Wood and neighbourhood. Sandpipers were also common along the banks of the Wharfe, and a nest containing eggs was found. Yellow Wagtails were also very common ; two or three nests of young Dippers were met with, and many others, containing either eggs or young birds, marked in the following list.

At Kilnsey Crag House Martins were breeding in very large numbers, the nests attached to the face of the cliffs making a very pretty and interesting sight ; both the Kestrel and the Redstart were noted as breeding there, and a great number of Swifts were also observed, many of them, no doubt, having nests in the crevices of the rocks. Fifty-four species of birds were observed in all ; of this number 34 are residents and 20 summer visitors.

The waters of the Wharfe were very low and exceedingly clear, so that large numbers of Grayling—some of them very fine specimens—were seen to the best advantage.

The day's work resulted in two species new to the district being added to the list, viz., the Dormouse, seen by Mr. Fortune in Grass Wood, and the Whiskered Bat, an example of which most opportunely and considerately dropped out of the trees right into the midst of several officers of the Union during the progress of the general meeting, which, on account of the delightful weather, was held in the large garden attached to Grassington House.

The following is a complete list of the Vertebrates observed during the excursion. The asterisks (*) denote that eggs, and the daggers (†) that young birds were observed :—

Mammals.

Whiskered Bat.
Weasel.
Squirrel.
Dormouse.
Water Vole.
Field Vole.
Hare.
Rabbit.

Birds.

RESIDENTS.

†Missel Thrush.
†Song Thrush.
Blackbird.
Redbreast.
Goldcrest.
Hedge Accentor.
†Dipper.
Great Tit.
Blue Tit.
†Wren.
†Pied Wagtail.
†Grey Wagtail.
*Meadow Pipit.
*Greenfinch.
*House Sparrow.
*Chaffinch.

Lesser Redpoll.
Bullfinch.
Corn Bunting.
†Starling.
Jay.
Magpie.
Jackdaw.
Crow.
Rook.
*Skylark.
Kestrel.
Ring Dove.
Stock Dove.
*†Pheasant.
Partridge.
Golden Plover.
Snipe.
Curlew.

Migrants.

Ring Ouzel.
†Wheatear.
Whinchat.
†Redstart.
Whitethroat.
Blackcap.
*Garden Warbler.
Willow Warbler.
Wood Warbler.
Sedge Warbler.
Yellow Wagtail.
†Tree Pipit.
Spotted Flycatcher.
*Swallow.
*Martin.
*Sand Martin.
Swift.
Cuckoo.
Landrail.
*Sandpiper.

Reptiles and Amphibians.

Common Lizard.
Smooth Newt.
Toad.
Frog.

Fishes.

Bullhead.
Minnow.
Trout.
Grayling.

For the Entomological Section, Mr. J. H. Rowntree (Scarborough), reported that the members had had a good day. Mr. Porritt had worked along the river side for Neuroptera and Trichoptera; whilst Messrs. Henry Lupton (Leeds), Wm. Mansbridge (Horsforth), and himself, had chiefly confined their investigations to the lepidoptera of the Grass Wood. The lepidoptera noticed included the local *Eupithecia pygmæata* (by the river-side between Linton and the Grass Wood); *Procris statices*, commonly; *Venusia cambricaria* commonly; *Demas coryli*, not uncommon; *Numeria pulveraria*, *Melanthia albicillata*, *Pyrausta punicealis*; whilst others of less note, in greater or lesser numbers, were *Anthocharis cardamines*, *Nudaria mundana* (larvæ), *Venilia maculata*, *Fidonia piniaria*, *Abraxas ulmata*, *Lomaspilis marginata*, *Eupithecia lariciata*, *Coremia propugnata*, *C. ferrugata*, *Scotosia dubitata*, *Larentia pectinitaria*, *Asthena candidata*, *Emmelesia albulata*, *Tortrix icterana*, *Pardia tripunctana*, *Chrysoclista flavicapitella*, and many others. Of Neuroptera and Trichoptera, *Chloroperla grammatica* was abundant; *Isopteryx burmeisteri*, *I. tripunctata*, *Nemoura meyeri*, *N. cinerea*, *Sialis fuliginosa*, *Hemerobius orotypus*, *Stenophylax stellatus*, *Polycentropus flavomaculatus*, *Rhyacophila dorsalis*, and *Tinodes dives*; the last mentioned, which was new to the county, seemed fairly common. In addition a large species belonging to the Perlidæ, taken at the 'Tin Brigg' at Linton Falls, is as yet undetermined.

Mr. J. A. Erskine Stuart, Secretary of the Botanical Section, writes:—The botanists at Grassington had an excellent day's work, although owing to the lateness of the season many of the plants were not in flower. Grass Wood and the river banks were thoroughly investigated by a considerable band, who spread out in all directions,

and found the greater number of the rarities mentioned in the circular, besides one or two additional. The principal plants were *Thalictrum minus* v. *flexuosum*, *Trollius europæus*, *Viola hirta*, *Geranium sanguineum*, *Rhamnus frangula*, *Spiræa filipendula*, *Rubus saxatilis*, *Dryas octopetala* (at Arncliffe by Mr. James Backhouse), *Rosa mollis*, *Saxifraga hypnoides*, *Hieracium anglicum* (by Mr. Backhouse at Kilnsey Crag), *Pyrola minor*, *Bartsia odontites*, *Melampyrum pratense*, *Salix phylicifolia*, *Polygonatum officinale*, *Convallaria majalis*, and *Melica nutans*; and of ferns *Asplenium viride*, *A. trichomanes*, *A. ruta-muraria*, and *Scolopendrium vulgare*. No cryptogamist reported, so we are without information as to lichens and mosses.

Mr. B. Holgate, F.G.S., supplies the following report of the Geological Section :—'To Rilston and Cracoe' was the order of the day for the geologists who took part in the outing. All were in high spirits as, in bright sunshine, they left Skipton about 9.30 a.m., and went along the pass between Airedale and Wharfedale, under the guidance of that most genial and learned member of the Geological Survey, Mr. Tiddeman. The craggy edge of Embsay Moor made a high sky-line to the right, and the old eyrie of the Nortons frowned forbiddingly from the summit. One feature of the landscape in the valley was most apparent. The latter was studded here and there with dome-like knolls, most prominent near the base of the crags, which were capped with gritstone. This peculiarity struck one at once, covered as the knolls were with the lovely green which always marks the presence of limestone. They contrasted with the swarthy heather on the grit moors above, and the exclamation was often repeated, 'What peculiar mounds!' followed by the question, 'How have they been formed?' It was to examine into this problem that the party had come to the spot, and to learn from Mr. Tiddeman what he thought on the subject, it being one to which he has devoted a great deal of attention.

Most people who know anything about Yorkshire have heard of the great Craven faults, faults so immense that the strata on one side of them are something like a mile lower down in the earth than the corresponding ones on the other side. Faults are of common occurrence, and no one can pass along the main working of a coal mine of any size without coming across several of them. Generally the strata have been cut off, appearing again it may be at a few feet or yards higher up in the same mine; but as a rule we are right in supposing that though the same strata are at different levels, they follow one another in the same order and thickness. From the investigations made by Mr. Tiddeman, however, it would seem that that immense fracture in the crust of the earth, known as the Craven

fault, was made very slowly, and took an immense period of time. The scene of it was at one time the bottom of a sea. Corals were then hard at work, each little animal doing his little share in the immense work of building up the crust of the earth. The encrinite rooted himself among the corals, and reared his head slowly, waving his arms through the water in search of food. The numerous kinds of brachiopods attached themselves by means of their self-made strings to different objects. Fishes swam in the waters, and water-snails and trilobites crept about, acting as scavengers. The shells and hard skeletons of all these animals went to build up the reef, much in the same manner as the reefs in the South Seas are being built up at the present day. But there was a line of weakness in the earth, and on one side this line it lowered more rapidly than on the other. The sea, however, did not become much deeper for all this lowering, and as the animals became more prolific on the lower side than on the upper, the coral had to build up his habitation more rapidly, for he would die if he got too far beneath the surface of the water, and similarly with the other animals. But with all this, as age after age went on, the depression gradually began to go on at a greater rate than the reproductive power of the animals whose shells went to build up the thick mass of what is now limestone, and instead of forming a long reef of equal height, the work became broken up into rows of detached portions of reef, and as the bottom went on lowering the water became too deep to sustain the life of even these animals, which had outlived their fellows, and struggled on to build up these islets. Not only had the water been too deep, but fine black mud was being washed very slowly into the deeper part, killing outright the animals which, of all others, required clear water for their existence, and this mud brought with it fronds and parts of ferns and other plants, so that even these islets began to be interred in mud. The soft open parts of the corals crumbled away, and the upper hard layers of shells began to bend over and sometimes to break off and slide down into the muddy bottom; but in any case it went to form a dome-like cap over the main body of the islet. The deposit of mud became more rapid, and in time interred the entire reef. All this time the beds on the other or upper side of the fault, although they had been lowering, had done so so slowly that the animals whose dead shells went to make up the strata had a hard struggle for existence, and at length died out, partly because the water was too shallow, and partly because the animals were choked with mud. These latter deposits, extending from this fault into Northumberland, are known as the Yoredale Rocks, and are well developed in the valley of the Yore.

Sept. 1891.

The deposits first spoken of are known as the Clitheroe limestones, the mud being the Bowland shales; and they form a base for the carboniferous strata of Yorkshire and Derbyshire. Since that time ages have passed away; these reefs and their islets have been surrounded by other strata, and buried deep in the earth; but, as change after change has taken place, they have been again raised, and the mud which surrounded them has been gradually washed from them by weather and water, and carried down the rivers Wharfe and Aire. But the dome-like covering has protected the knolls, and they still stand out, immense monuments of one of the many curious ways in which the earth has been built up, the mysteries of which a geologist makes it his work to unravel. Three of these knolls were visited by the party—namely, those of Stebden, Carden, and Elbolton; and in these the dip of the rocks and the different animal and plant remains were found in illustration of what has been said as to the manner in which they were formed. As the party stood on the sides of these immense mounds, the occurrences of much later periods were passed in review before them. Evidence lay there of the last great geological period previous to the present one, the evidence of which is almost universal in our Yorkshire valleys. In the hollows between the knolls were the mixture of clay, sand, and the different kinds of rocks found in the valley lying together in total disorder, their surface forming a hummocky, irregular outline—the whole being the residue brought down the valley by a glacier. At Elbolton the party had a view of a still later episode. They there descended the now famous well-like cave in which has been found the remains of some twelve human beings; as also those of bears, wild boars, wolves, and other animals now long extinct in Britain—the latter of which had probably fallen in by accident. The geological business over, the party went through the once-thriving but now almost deserted village of Thorpe to Grassington, all well pleased with the interesting and instructive day, and with thanks to the leader, who had so clearly explained on the spot this very curious formation.

For the Conchological Section Mr. William Nelson, who was during the course of its proceedings elected one of its Secretaries in place of Mr. John Emmet, F.L.S., whose resignation the Section was very sorry to receive, prepared the report, as follows :—

Messrs. Nelson and Roebuck began operations at Cracoe on the wagonette stopping for rest for the horses, by searching at the foot of the walls, where a beautifully coloured *Limax agrestis* was found, which Mr. Roebuck identified as var. *lilacina*, while they also took *Zonites nitidulus*, *Helix rufescens* (commonly), *H. rotundata*, and

Clausilia rugosa, before again mounting the conveyance. Then being rapidly driven towards their destination they could not but admire the beautiful flowers of *Geranium sylvaticum* by the road-sides. Directly the Wharfe was reached and crossed the conveyance was left for good, and the party followed the footpath along the north bank to Ghaistrills. Here, in a water-trough were obtained examples of *Limnæa peregra*, and a single specimen of *Helix lapicida* ensconced in a corner of the trough a few inches above the water. Passing through Grass Low Wood and crossing the Kilnsey road, Grass High Wood was reached. Diligent search here produced but little result. The search was, however, steadily continued as the way was made to the foot of Dewbottom Scar. Here there was a pretty stiff and awkward climb up the steep slope and the nearly perpendicular rocks of the summit, but this being reached the sight of the abundant blossoms of *Rosa mollis* was a rich reward. On the summit some time was spent in searching amongst the only damp leaves to be found. Here were obtained dead examples of *Vitrina pellucida* (each excursion this year has confirmed as a fact that winter and early spring is the time to collect this mollusc in a living state), *Zonites cellarius*, *Z. nitidulus*, *Z. purus*, *Z. fulvus*, *Z. crystallinus*, *Z. glaber*, *Z. alliarius*, *Z. radiatulus*, *Bulimus obscurus*, *Pupa umbilicata*, one *Vertigo edentula*, *Clausilia rugosa*, *Cl. laminata*, several *Azeca tridens*, a few *Zua lubrica*, and a dead *Carychium minimum*. On this spot being left the wood was traversed by way of its bare and sterile summit, enlivened however by the chaste flowers of the Mealy Primrose, and passing alongside Gregory Scar, the great profusion of the Globe-flower was noticed in certain parts of the woods. Grassington was reached soon after this, when Mr. A. H. Pawson laid before the Section examples of *Helix nemoralis*, *H. arbustorum*, *Succinea putris* and *Limnæa peregra*, which he had collected the previous evening, and Mr. Riley Fortune, F.Z.S., showed specimens of *Ancylus fluviatilis*. At the sectional meeting, Mr. William Cash, F.L.S., of Halifax, was voted to the chair, and afterwards reported the results to the general meeting. After the meetings were over, Messrs. Pawson, Roebuck, and R. Rosenstock, B.A., who were remaining behind for the week end, took the opportunity to go down the Burnsall footpath to look for and confirm the reported occurrence of *Cyclostoma elegans*. This was soon done, numerous dead examples being found on banks close to the footpath and river in Lythe woods, about a mile and a half from Grassington, and with them numbers of other dead shells, including plenty of *Helix ericetorum*. This walk was continued to Hebden, where a mill-dam yielded numerous *Limnæa peregra* and *Pisidium fontinale*.

Next day the same collectors found various other shells, including *Helix concinna* and *H. rupestris* on the topmost summits (975 feet) of Grass Wood. The total number of species observed was 33, of which 3 were slugs, 3 fresh-water shells, and the rest land shells, a very satisfactory result considering the dryness and warmth of the weather. *Vertigo edentula* and *Zonites purus* were of interest as additions to the published lists for Grassington.

This concluded the scientific portion of the business, and the Hon. Secretaries then brought forward the question of representation at the forthcoming meeting of the British Association at Cardiff, their colleague, the Rev. E. P. Knubley, M.A., being unanimously chosen to that office. A vote of thanks passed to the Chairman, on the motion of Messrs. Wm. Horne, F.G.S., and J. E. Bedford, F.G.S., terminated the meeting.

It may be added that several photographers present added to the interest of the Geological Section by taking some of the exposures along the line of route. The Hon. Secretaries invite all persons taking photographs on the Union's excursions to supply a copy of each photograph for the Y.N.U. albums.—E.R.W.

NOTES AND NEWS.

Our colleague, Mr. Alfred Harker, M.A., F.G.S., has published in the Geological Magazine for June some 'Notes on a Collection of Rocks from the Tonga Islands,' a group which has hitherto received no attention from geologists.

The early publication of a new Yorkshire book by Mr. Frederick Ross, entitled 'Contributions towards a History of Driffield,' is announced, of which the natural history chapters will be by Mr. Lewis Buttle Ross, F.C.S., a prominent member of the Yorkshire Naturalists' Union.

The latest addition to our Exchange list is 'The New Zealand Journal of Science,' a monthly magazine devoted to the furtherance of pure and applied science throughout the colony. It is published at Dunedin, ably edited, well printed, and the papers appear to be of great interest as well as of scientific value.

The Buzzard which our late lamented friend Mr. John Harrison of Wilstrop has had in captivity for some years past has laid a couple of eggs this year, on April 30th and May 3rd, and when Mr. Harrison's niece removed them she put a hen's egg instead. The Buzzard hatched a fine chicken, of which she was immensely proud, but unfortunately at the end of a week she was found carrying it about dead.

We hear from the Antipodes of the decease of a distinguished native of Westmorland, in the person of William John Stephens, who was born at Levens, 16th July, 1829, and died at Sydney on 22nd November, 1890. A man of varied attainments, he was Professor of Geology and Palæontology in the University of Sydney, and prominently identified with first the Entomological Society of New South Wales, and afterwards of the Linnean Society of N.S.W., of which latter body he was at times Hon. Secretary, Vice-President, and twice President, holding the latter office down to the close of his life.

In Memoriam.

DANIEL MACKINTOSH, F.G.S.

Many of our geological readers will have read with regret the announcement of the death of Mr. Daniel Mackintosh, who was widely known as an able and enthusiastic teacher of natural science, and was no less celebrated as an ardent worker in the glacial geology of the British Islands. The deceased gentleman, who passed away at the age of 76, had been in failing health for some time past. He had held, among other scholastic posts, the appointment of lecturer on geology and physiography to the Liverpool College, besides which, he had a high reputation among many of the leading institutions and educational centres of the country as a lecturer on these subjects and on astronomy. Elected a Fellow of the Geological Society of London in 1861, he became a prolific writer, and at a time when his strength permitted his best energies to be put forth there was no one whose name was more often met with in the geological literature of the day. His extensive field-work brought him in contact with some of the most noted savants of the age, among those whose friendship he enjoyed being the late Charles Darwin, Canon Kingsley, Sir Roderick Murchison, Professor Sedgwick, and Sir Charles Lyell.

Mr. Mackintosh was, we believe, by birth a Scotchman, but resided for some years in the south of England. He afterwards removed to Chester, where he materially assisted Canon Kingsley in establishing the Chester Society of Natural Science, frequently leading their early excursions. In 1875 the members of this Society subscribed a purse of £40 as a testimonial of their appreciation of his services, the gift being presented to him by the late Dean Howson. More recently he was awarded the Kingsley Memorial Medal, given in commemoration of their revered founder to those who have specially distinguished themselves in original scientific research, this being the highest distinction it is in the power of the Society to bestow. The Geological Society of London also recognised his work in presenting him with a grant from the 'Lyell Fund' in 1886.

On receiving his appointment at Liverpool, Mr. Mackintosh left Chester to reside at Birkenhead. He was elected President of the Liverpool Geological Society during the sessions 1881-83, when he delivered two addresses at the Royal Institution, in Colquitt Street, having for their subjects:—'The time which has elapsed since the close of the glacial period,' and 'Post-tertiary changes of level.'

Sept. 1891.

He also sat on the British Association Committee on erratic blocks, and rendered much valuable assistance to that body.

As a geologist he belonged to the pre-Lyellian school, but in later years he considerably modified many of his opinions, especially in regard to the effects of marine denudation in giving rise to certain prominent features of the landscape, such as valleys, cwms, and mountain passes, which are now generally held to be due to subaërial influences. But, in addition to his valuable general knowledge of the diversified rocks of the country, his most important contribution to science was, perhaps, that careful and systematic survey of the boulder clay and erratic blocks of the north-west of England and the east of Wales, which formed the subject of an elaborate memoir published in 1878 by the Geological Society of London. Although some of his views, especially those relating to the tripartite division of the Boulder Clay and the supposed inter-glacial age of certain deposits in the Cheshire area, do not seem likely to be accepted in their entirety by the modern school of glacial geologists, it is not too much to say that Mr. Mackintosh's observations have laid the foundation of a great part of the work of later explorers, and that his papers are standard authorities for students of our local glacial records on the rocks.

He published a work (now, unhappily, out of print) entitled 'The Scenery of England and Wales in relation to its Geology,' which comprised an account of his own observations covering a large part of Great Britain; scarcely a hill or dale possessing any feature of interest, existing in the country, with which he was not familiar. Among other works worthy of note may be mentioned his papers on the 'Inter-glacial Age of the Cave Mammalia,' and on 'Eskers and Lake Basins of Cheshire and Flint.'

During the last few years his life has been passed almost in seclusion, the state of his health having compelled him to relinquish most of his scholastic and other work. His wants were simple, and, as to his frugality, the following extract from a memorial notice in the *Chester Chronicle* will speak :—'Money was no object beyond its power of providing him with wholesome and humble fare. It was luxury beyond dreams, wealth beyond measure to him, to decipher some of nature's hieroglyphics in her grand history of the past, as recorded upon the face of the heavens and in the depth of the earth.' Such a character is, indeed, rare. Apart from his scientific eminence Mr. Mackintosh will be remembered with much affection by a large circle of friends and pupils, for his gentle disposition and kind and genial qualities were impressed upon all who knew him.

O.W.J.

Naturalist,

EXTRACTS
FROM A CONCHOLOGIST'S NOTE-BOOK.

WILLIAM NELSON,
Crossgates, Leeds; Hon. Curator to the Conchological Society of Great Britain and Ireland.

1. To Batley for Limnæa glabra.—On a bitter cold morning in the early part of February twenty-seven years ago, I started out accompanied by my friend J. Beevers—at that time an enthusiastic conchologist—in search for *Limnæa glabra* at a locality near Batley, particulars of which had been communicated to us by a mutual friend (and here I may say the locality was near to the present railway station, and has been built on many years ago). The weather for some time had been very mild, causing the vegetation to begin growing in the bottom of the hedges, but a severe frost having set in some days before our journey made it useless for us to search for shells on the road-side, so that we arrived at Woodchurch before making any attempt. Here we obtained specimens of *Ancylus fluviatilis* from a small rapidly-running stream, and then pushing along to our destination, which was a small pond in a bye-lane, we found the pond frozen over, but, procuring a stone, we broke a hole through the ice; then taking off our coats and turning up our shirt-sleeves we lay flat down on the ice, when we groped with our hands beneath it, and so obtained handfuls of *Callitriche*, amongst which we found a few specimens of *Pisidia*, and numerous examples of *Limnæa glabra*, some of which are now in my collection, and serve to remind me of my first acquaintance with this local species in one of its native habitats.

2. To Havercroft Green for Limnæa glabra.—On a fine morning in the latter part of February 1882, I called on J. Hebden, who for many years was one of our very best out-door naturalists (can nothing be done to re-enlist his interest in our common studies?), and who had promised to take me to this locality for *L. glabra* (which I had not hitherto visited). Passing through Sandal we examined an old garden wall, and noticed the Rue Fern (*Asplenium ruta-muraria*), but found no shells. In a lane at Walton we obtained *Zonites nitidulus*, and going along the side of Haw Park searched the foot of the wall, and obtained examples of *Zonites alliarius*, *Z. excavatus*, *Helix aculeata*, *H. hispida* and *H. rotundata*, and. under a piece of rotting wood, *Zonites radiatulus*. Arriving at Cold Hiendley reservoir we skirted the large sheet of water, and searched one or two small ponds without success. Crossing some fields, we went in anything but a direct course; eventually we turned along a lane, where we noticed the first flowers

of the Lesser Celandine. We at length came to Havercroft Green, which was our destination. Here there are a number of small ponds, in one of which we collected a fair quantity of *Limnæa glabra*, which I think may be referred to the variety *subulata* (Kick.), as figured by Clessin (Deutsche Exc. Moll. Fauna, Fig. 256, 1884). The only other shell we obtained here was *Pisidium pusillum*. Before leaving here it began to rain, and went on at a steadily increasing rate until we got to Ryhill, where we stopped to shelter; but at length we were obliged to turn out and trudge along in the pouring rain to Wintersett. Leaving the village our troubles commenced, for Hebden, who usually displays a want of knowledge of localities, out-Herods himself by taking us a considerable distance across ploughed fields, only to discover that he is hopelessly lost. At length we reached the wall of Haw Park; this we skirted till we got in sight of Walton, and so from there to Sandal and Wakefield, where we arrived thoroughly drenched.

NOTES AND NEWS.

The Geologists' Association announce for publication a 'Record of Excursions made between 1860 and 1890.' The Association has visited, during the past thirty years, most places of geological interest in England and Wales. The record of excursions is a collection of the reports made by the directors of the several excursions, illustrated by maps or sections of the places visited, and giving at the same time information as to the Ordnance Survey Maps, the Geological Maps, and the recent literature on the subject. Thus the work is seen to be one of considerable value to the working geologist, the student, and the amateur, and it will no doubt prove to be of especial value to the secretaries of Field Clubs and local Natural History Societies.

We have to welcome a new magazine, whose object is to further the investigation of the physical features and the natural history of a definitely restricted area. 'The Mediterranean Naturalist,' of which the first number (June, 1891) lies before us, is to appear monthly, price 5s. per annum, and is conducted by Mr. John H. Cooke, B.Sc., F.G.S., of Highland House, St. Julians, Malta, who promises, in his introductory remarks, that the magazine shall be devoted to the natural history of the Mediterranean Sea, its islands and its shores. We note that our own old friend and supporter, Mr. T. Mellard Reade, F.G.S., of Liverpool, promises to contribute to future numbers, and that the list of contributors also includes such other distinguished names as those of Prof. G. Capellini of Bologna, Cav. G. Jervis of Turin, Dr. Johnstone-Lavis of Naples, etc., and the opening number is a varied and attractive one.

Some of the most charming of Yorkshire Dale-scenery is to form the subject of an important new Yorkshire book announced as in preparation by the Rev. W. Thompson, M.A., of Sedbergh, who will treat of 'Sedbergh, Garsdale, and Dent.' The geology and botany of the district will not be overlooked; Mr. Thompson is himself a botanist, and published a 'Florula Sedberghensis' privately some years ago. The district is moreover classic ground to geologists, being the birth-place of Adam Sedgwick. A portrait of him is to be given, also of Dr. Dawson, the self-taught mathematician, and of Dr. Inman, whose 'Nautical Tables' are still the text-book used in the Royal Navy. The heronry near Sedbergh is to be noticed, and the work will be illustrated by Mr. J. A. Symington's drawings. Mr. Thompson has our every good wish for the success of his work.

DAUBENTON'S BAT ADDED TO THE YORKSHIRE FAUNA.

WM. EAGLE CLARKE, F.L.S.,

Natural History Department, Museum of Science and Art, Edinburgh; etc.

At last this local but widely-distributed Bat (*Vespertilio daubentonii*) has been detected in Yorkshire. That it would sooner or later be recorded for the county has been regarded as a matter almost of certainty by those interested in the distribution of the British Mammalia, to whom the absence of this species from an area of such magnitude and diversity of aspect has always seemed to be little less than an impossibility. These opinions are now happily confirmed, and the species appears to be not uncommon in at least one district of North-West Yorkshire. The example which I had the pleasure of identifying was forwarded to me for that purpose by my friend Mr. Basil Carter, to whom belongs the credit of obtaining the first Yorkshire example. The specimen, a male, was shot as it was flitting over the river Yore at Masham, on the 19th of August last, at 8.30 p.m. It appeared to be accompanied by several others of the same species, and these, attracted by the squeaks of the captive, flew quite closely around as he took it from the water into which it had fallen. Mr. James Carter writes me that he has often watched similar Bats flying over the surface of the Yore, but always failed in his efforts to secure a specimen of what he felt sure was *V. daubentonii*.

Is Dr. Dobson's description of the tragus as given in his excellent Catalogue of the Cheiroptera, p. 297, wherein it is said to terminate 'in an acute point,' correct? I have examined a number of perfectly fresh examples this year, and I find that this organ, though it tapers considerably, is decidedly *rounded* at its distal extremity; and that such is the case is well-shown in the enlarged figure of the ear of this species given by Blasius in his 'Fauna der Wirbelthiere Deutschlands,' Saugethiere, p. 99.

NOTE—FUNGI.

Geaster hygrometricus Fr. in Wharfedale.—As this fungus does not seem to have been recorded for West Yorkshire since the time of Bolton (1791), it may interest the readers of 'The Naturalist' to know that I came across three specimens on Rombalds Moor on the evening of the 12th of August. The plants were very old and dry, but I sent them to Dr. Cooke, who kindly identified them for me. These 'earth-stars,' as they are popularly called, are interesting, not merely on account of their extreme rarity, but also for their curious structure and hygrometric properties.—PERCY H. GRIMSHAW, Burley-in-Wharfedale.

NEW YORKSHIRE EARTHWORMS.

Rev. HILDERIC FRIEND, F.L.S.,

President of the Wesley Scientific Society; Author of 'Flowers and Flower-Lore,' etc.; Idle, Bradford.

A YEAR'S work among the earthworms of Yorkshire has enabled me to correct and enlarge the list which I published some months ago. As it seems likely that the list will be still further enlarged by continuous research, I do not propose at present to revise it, but simply place on record new facts. I have recently been able to identify a new worm found in the Haigh Beck, Idle, which has I believe, been regarded formerly as the young of another species. In 1836 there appeared a catalogue of species of Annulose Animals in Loudon's Magazine of Natural History (vol. ix., 235), by Templeton, in which we find reference to an unknown worm. This is named *Lumbricus omilurus* (= *Omilurus rubescens* Temp.). Recent writers have all pushed it aside, and relegated it to the limbo of the unknown. I have been able to recover what I believe to be Templeton's species, and as it is a genuine Lumbricus, and at present is without synonyms, I purpose retaining the name *Lumbricus rubescens* (Temp.), and calling it the Ruddy Worm, as distinguished from the Red Worm (*Lumbricus rubellus* Hoffm.), with which I believe it has been confounded.

The following is a description of my Yorkshire specimens, which corresponds very nearly with that given by Templeton.

Colour exactly like the Red Worm, except the tail, which is usually a more transparent flesh-colour; beautifully iridescent, pale underneath. About three or four inches long, fore part of the body round, tail flattened. No apparent girdle (clitellum), but a well-defined region (segments 34 to 39), modified especially on the underside to serve the purposes of a clitellum. A band connects segments 35 to 38 on the under surface—this is known as *tubercula pubertatis*, and is farther back than in any other known British species of Lumbricus. In the Red Worm (*L. rubellus*), the well-marked clitellum extends from segments 27 to 32, the tubercula from 28 to 31. Total number of segments about 120. Setæ of three kinds, arranged as in typical Lumbricus, with specially modified (penial) setæ on segments 11, 13, 34 to 40 (under the clitellum). The first dorsal pore varies in position between the 5th and the 7th segments. The male pore is on a papilla in segment 15, and prominent papillæ are found in the 28th and 29th quite ventrally. The worm like the other true Lumbrici, and unlike the majority of the Allolobophoræ, yields no coloured fluid, but secretes a slimy mucus when irritated.

Internally, so far as I have at present observed, there are the normal pairs of spermathecæ, four pairs of seminal vesicles, and two pairs of calciferous glands. As these structures vary, however, with the season and sexual maturity of the worm, further examination will be necessary.

I have found a new Yorkshire worm near the Strid, in Wharfedale, which I believe will also prove new to Britain. It belongs to Eisen's Dendrobæna division, but as the nomenclature is bewildering I forbear adding to the confusion. The following brief description may, however, be useful.

Worm about 1½ inches in length. Very similar at first sight to the Purple Worm (*L. purpureus*), but unlike it has the male pores on prominent papillæ extending over the adjoining posterior segment, while the setæ are in eight distinct rows, making the worm octohedral. The clitellum extends from segments 29 to 33.

NOTE—LEPIDOPTERA.

Larentia ruficinctata near Scarborough.—I beg to record the finding of the imago of *Larentia ruficinctata* on Hutton Buscel Moor on July 16th. I was in the company of Mr. H. W. Head, who at once identified the insect, which tallies exactly with the description in Newman. It differs materially from *L. cæsiata*, which is, I believe, not uncommon here. The Moor at that point is about 450 feet above sea-level. The White Meadow Saxifrage (*S. granulata*) does not grow in the neighbourhood; and therefore, though this is the only food-plant named by Newman, the larva probably has alternative food plants not yet recorded.—REGINALD H. BARKER, Hull, August 7th, 1891.

VARIATION IN BRITISH NOCTUÆ.

The British Noctuæ and their Varieties. By J. W. TUTT, F.E.S. Swan, Sonnenschein and Co. Vol. I. 5s. 6d.

WE have received the first volume of this book, which has for some time been awaited with considerable interest by lepidopterists. With the first paragraph in the 'Preface,' and consequently in the book—'The study of the causes of the variation of lepidoptera has now become such an acknowledged part of our work, that there appears to be but little need to explain the necessity for bringing out a systematic and descriptive volume of the varieties of a part of one of our most interesting groups of lepidoptera'—we cordially agree. The 'Introduction,' too, explaining what the author conceives to be the causes which produce variation in lepidoptera is a very valuable contribution to entomological literature. The author's theory as to melanic varieties, of which we have probably more in the West Riding of Yorkshire than in any other part of the country, to the effect that they are caused by an excess of moisture and cold,

together with an exclusion of the sun's rays—as propounded by Lord Walsingham in his presidential address to the members of our Union in 1885—combined with natural selection, is fully borne out in our West Riding districts, and is the theory which has for some time, as the result of a careful study of these melanic forms and their habitats, most commended itself to ourselves. The primary object of the book, the describing and differentiating of all the known forms of the British Noctuæ, is well and exhaustively done (in this volume to the end of the genus *Caradrina*), and the labour involved in it must have been enormous. But that the author has seen fit to bestow separate names on nearly all the forms he has described, we think is a mistake, the mistake of the book. We should not ourselves have used the new (as it is called, though in reality it professes to be the oldest!) nomenclature, but that is simply a matter of opinion. The absurdity of it, however, reaches its climax when our old friend *Apamea oculea* has no less than thirty names given to its various forms, and one has to study the nomenclature for some time before discovering that *oculea* is really the species treated of at all! We had always considered the conchologists the greatest sinners as variety namers, but Mr. Tutt has outdone the conchologists completely, and to make so many vars. *rufa*, *rosea*, *intermedia*, *suffusa*, *grisea*, and many others named simply from a difference in colour of the stigmata, or a spot, and especially from a single specimen, is altogether unwarrantable. For example, *Xylophasia rurea* has nine named forms given to it, whereas two variety names in addition to the type name would, we think, be amply sufficient. The author describes *Miana strigilis* and *M. fasciuncula* as separate species, but yet goes on to say that '*M. fasciuncula* is so exactly like *M. strigilis* in shape and markings, that besides colour there appears to be no distinguishing mark in the imago state by which it can be separated.' This statement we entirely deny, as there are no two more satisfactorily separated species in the list of British Lepidoptera! Dr. Chapman's recently proposed division of the genus *Acronycta* is adopted, and if the genus is to be divided at all we hope it will stand, as it is the result of a very painstaking and careful study of the group on Dr. Chapman's part, and as it seems to us superior to any division which had previously been suggested. To all lepidopterists who take interest in the study of varieties (and where now is one who does not?), the book, when complete, will be invaluable as a successful attempt at a description of the known forms; but that they will use all the names in the labelling of their cabinets, or in conversation or correspondence, is probably more than the author expects.—G.T.P.

ADDITIONS TO WEST YORKSHIRE FUNGI (HYMENOMYCETES).

H. T. SOPPITT.

It has been deemed advisable, in view of the forthcoming fungus foray at Doncaster, to enumerate the more interesting of the Hymenomycetes which have been found in West Yorkshire since the Bramham and Harewood fungus forays of September 1888.

Owing in great measure to the lack of mycological workers, the greater portion of West Yorkshire has not been investigated, and doubtless there yet remains a large number of species to be recorded.

The majority of species in the following list are new to the West Riding; and those marked with an asterisk have been previously recorded, but the localities are additional. The total number of Hymenomycetes on record, including those in Lees' 'Flora of West Yorkshire,' and in the 'Naturalist,' is 552, which is small compared with other areas of smaller extent.

AGARICINI.

Agaricus (Amanita) spissus Fr. Nab Wood, Saltaire, Oct. 1889!

Agaricus (Amanita) adnatus Sm. Heaton Woods! Nab Wood, Sept. 1889, R. Dewhirst. Bingley, Aug. 1891, J. A. Butterfield.

Agaricus (Armillaria) melleus var. **laricinus** Fr. On wood at Liversedge station, Rev. W. Fowler.

Agaricus (Tricholoma) cuneifolius Fr. Pasture at Seven Arches, Bingley, Sept. 1889!

Agaricus (Tricholoma) albus Schæff. Beckfoot Lane, Cottingley, Oct. 1890.

*__Agaricus (Tricholoma) brevipes__ Bull. Frequent in pastures at Otley Chevin!

Agaricus (Clitocybe) opacus With. Beneath the wooden floor of an old building, White Abbey, Bradford, Nov. 1890; B. Illingworth.

Agaricus (Mycena) adonis Bull. Pasture on Baildon Moor, Oct. 1889!

Agaricus)Mycena) lutea-albus Bolt. Pastures at Cottingley and Goitstock, Sept. 1888!

Agaricus (Mycena) ammoniacus Fr. Field at Gomersal; Rev. W. Fowler. Near Shipley Glen, Oct. 1889!

Agaricus (Mycena) plicosus Fr. On lawn at Peel Park, Bradford, Oct. 1889!

Agaricus (Mycena) sacchariferus B. & Br. Shipley Glen Bog, July 1889!

Agaricus (Omphalia) sphagnicola B. & Br. Swamp in Nab Wood, Oct. 1890!

Agaricus (Omphalia) griseo-pallidus Desm. Bingley Woods, Oct. 1890!

Agaricus (Omphalia) stellatus Fr. On twigs, Calverley, Nov. 1889!

Agaricus (Pleurotus) corticatus Fr. On a fallen tree, Goitstock, August 1891!

*__Agaricus (Pleurotus) euosmus__ Berk. Plentiful on decaying poplars, Liversedge, 1890; Rev. W. Fowler.

Agaricus (Entoloma) bloxami Berk. Pasture near Bingley Woods, Sept. 1889!

Agaricus (Entoloma) majalis Fr. Shipley Glen, May, 1889!

*__Agaricus (Clitopilus) orcella__ Bull. Pastures, Bingley and Baildon, 1890!

Agaricus (Leptonia) serrulatus Pers. Thornton Moor, Sept. 1888; W. West.

*__Agaricus (Leptonia) chalybæus__ Pers. Austwick, Aug. 1891!

Agaricus (Nolanea) mammosus Linn. Field near Bingley Woods, Sept. 1888!

Agaricus (Pholiota) erebius Fr. Bingley Woods, Sept. 1889!

Agaricus (Pholiota) pumila Fr. Mossy ground, Idle quarries, Oct. 1890.

*__Agaricus (Flammula) inopus__ Fr. Fir plantation, Cottingley, Sept. 1889!

*__Agaricus (Stropharia) squamosus__ Fr. Wood in Coxley Valley; Rev. W. Fowler.

Agaricus (Psilocybe) physaloides Bull. Nab Wood, Saltaire, Sept. 1889!

Agaricus (Psathyra) spadiceo-griseus Schæff. Wood floor of a summer-house at Dewsbury; Rev. W. Fowler.

Agaricus (Panæolus) retirugis Fr. Fagley, Nov. 1889!

Agaricus (Psathyrella) hiascens Fr. Bingley Woods, Oct. 1890!

Coprinus hendersoni Berk. On a mushroom bed, Bradford, Aug. 1891!

Cortinarius (Dermocybe) uliginosus Berk. Sphagnum swamp, Nab Wood, Oct. 1890!

Cortinarius (Hygrocybe) duracinus Fr. Bolton Woods, Sept. 1890!

Cortinarius (Hygrocybe) fasciatus Fr. Shipley Glen, Oct. 1890!

*__Hygrophorus chlorophanus__ Fr. Pastures, Calverley, Nov. 1888!

*__Hygrophorus cossus__ Fr. Nab Wood, Saltaire; R. Dewhirst, Sept. 1888.

Hygrophorus lætus Fr. Common amongst brackens in Shipley Glen, Sept. 1889!

Lactarius involutus Soppitt. Bolton Woods, Aug. 1890!

*__Lactarius glyciosmus__ Fr. Wood in Coxley Valley; Rev. W. Fowler.

*__Russula depallens__ Fr. Field at Dean Hill, Barnsley; Rev. W. Fowler.

*__Russula rubra__ Fr. Esholt Woods, Aug. 1891!

*__Russula lutea__ Fr. Bolton Woods, Aug. 1890!

*__Cantharellus cinereus__ Fr. Esholt Woods, Oct. 1889!

*__Panus stypticus__ Fr. Shelf Woods!

POLYPOREI.

*__Boletus striæpes__ Secr. Near Halifax, 1890; C. Crossland.

*__Boletus olivaceus__ Schæff. Bolton Woods, Aug. 1890!

*__Boletus laricinus__ Berk. Abundant in plantation on Giggleswick Scar, also in Clapham Woods, Aug. 1891!

*__Boletus versipellis__ Fr. Nab Wood, Saltaire; R. Dewhirst.

*__Fistulina hepatica__ Fr. On oaks, Bingley! Near Harden, T. Hebden.

Polyporus brumalis Fr. Bolton Woods, April 1889!

*__Polyporus terrestris__ Fr. Chellow Dean, July 1890!

*__Polyporus destructor__ Fr. Liversedge station; Rev. W. Fowler.

HYDNEI.

Hydnum niveum Pers. Bingley Woods, June 1889!

THELEPHOREI.

Craterellus cornucopioides Pers. Not uncommon near the 'Strid,' Bolton Woods, Aug. 1889-90 !

Corticium corrugatum Fr. Calverley Woods, Aug. 1889 !

Corticium puteanum Fr. Esholt, Nov. 1888 !

Cyphella muscicola Fr. On *Mnium hornum*, Bolton Woods, Aug. 1890 !

CLAVARIEI.

Typhula gyrans Fr. Shipley Glen Bog, 1889; F. Rhodes !

TREMELLINEI.

Tremella lutescens Pers. On dead hawthorn, Calverley Woods, Jan. 1889 !

NOTE—MAMMALIA.

Badger in South Yorkshire.—In addition to the numerous records of the occurrence of the Badger in Yorkshire published in 'The Naturalist,' a fine specimen was found on the line between Hampole and Adwick-le-Street near Doncaster about six years ago. It was much mutilated on one side, but was taken to a taxidermist in Doncaster, who did his work very creditably, so much so that, as far as appearances go, it is a perfect specimen. It is now in the possession of the finder at Hampole, where I saw it not very long ago.—E. G. BAYFORD, Doncaster, 24th July, 1891.

NOTES—ORNITHOLOGY.

Blue Tits.—On Sunday, June 28th, I was in my garden watching a Blue Tit (*Parus cæruleus*) feed its young which were in a wall. Wanting to see what it was the old birds were taking, I stood rather near the nest; in fact, so near as to prevent them going in. After standing a short time, I noticed *three* old birds on the wall a short distance away, evidently waiting. I called a friend's attention to this, and then stood a greater distance away. All three old birds then went in and left the small green caterpillars they were bringing.—A. C. HOLTBY, Heaton House, Boroughbridge.

Pheasant Nest by Roadside.—The roads on the Yorkshire Wolds were laid out at the beginning of the century by Act of Parliament, and are of a uniform width of forty feet. The central portion only, about four yards wide, is macadamized, the sides are in grass, charming for horse exercise, and utilised for cottagers' cows, which from May to October are daily turned out to graze under the care of a boy or old man. On May 6th my children were returning from a primrose expedition, walking on the grass by the roadside, when they suddenly came upon a pheasant, which did not offer to move till, like children, they stooped down to touch it. Then the bird decamped, and on examining a tuft of grass they found its nest, with seven or eight eggs in it. The nest was within four feet of the actual road, and about four yards from the hedge. It seems extraordinary that a bird should select such a spot for its nest in close proximity to daily traffic, especially on an estate where there are very few pheasants. Driving with the owner of the estate on June 26th, I thought it sufficiently interesting to mention the fact to him. On reaching the place we got down to see what had happened. There were the eggs, forsaken but still unbroken, notwithstanding the various dangers to which they had been exposed for nearly two months, from the chance feet of wayfarers, horses, and cows. The parent bird must have been of a very confiding disposition, but its sagacity is proved by the fact of the preservation of the eggs during so long an interval.—E. MAULE COLE, Wetwang-on-the-Wolds, July 8th, 1891.

THE YORKSHIRE NATURALISTS' UNION AT HAYBURN WYKE.

THE third excursion of the year was organised for the investigation of that part of the Yorkshire coast lying between Peak (the south cheek of Robin Hood's Bay) on the north, and Cloughton Wyke on the south, and including Hayburn Beck, Staintondale, Cloughton Moor and Wyke, and the undercliffs from Hayburn Wyke to Peak. The meeting was held on Saturday, July 11th, 1891, and was well attended, between seventy and eighty members and their friends participating in the excursion; this is the more gratifying when the distance from the centre of the county is taken into consideration. On the other hand, the district investigated is very near the attractive watering-place of Scarborough, and the various railway companies—ever ready to facilitate the wishes of the Union—had granted permission for the tickets to be available until Tuesday, and many members took advantage of this, either to spend the time at Scarborough, or what was more commendable, in the immediate vicinity of Hayburn Wyke. The weather was most propitious, and the excursion was very successful, and members would have reached their homes in perfect happiness had not an unforeseen accident happened, which most unfortunately was not calculated to maintain the equanimity of the members. We will, however, not throw a gloom over the proceedings at this early stage, but reserve the dismal news for a few pages later. Several of the members had been on the scene since the previous day, but the main body journeyed from Scarborough by the train leaving at 10.40 a.m.

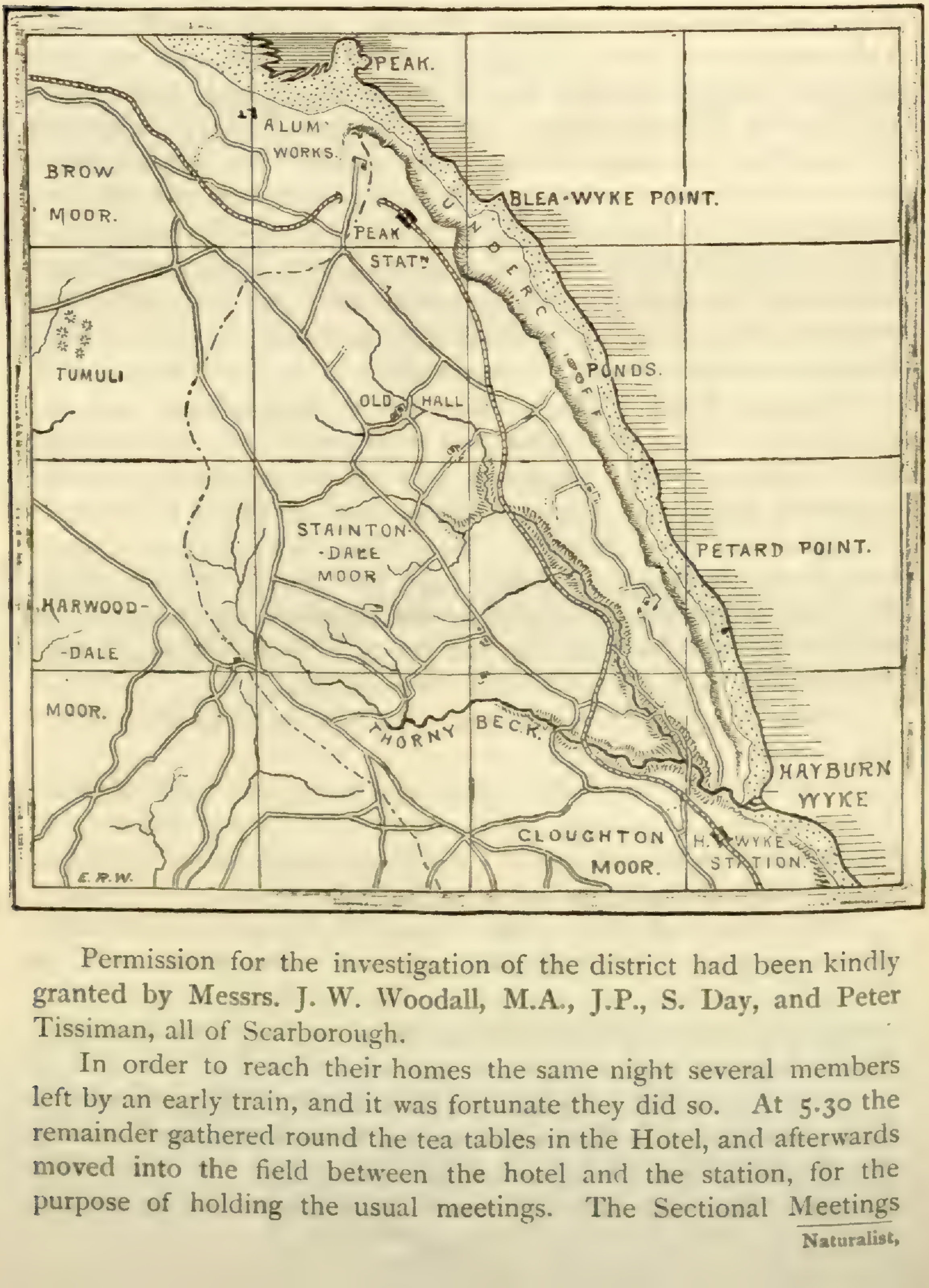
Three routes had been arranged for the better investigation of the district.

A considerable contingent, composed for the main part of members interested in geology, left the train at Cloughton Station, and passing through the village of Cloughton, proceeded to the coast, whence they worked northward to Hayburn Wyke.

Under the leadership of Mr. Edward R. Cross of Scarborough, those members botanically inclined also commenced work at Cloughton Station, and made their way to Ringing Keld Bog; crossing the moors, they eventually landed at the common rendezvous—Hayburn Wyke.

According to the excursion-programme, the third party were to work from Hayburn Wyke Station up Staintondale, and crossing to the coast, were to return by the undercliff. It was found, however, that the distance would be too great to be accom-

plished in the allotted time, and it was decided to modify the route by confining the investigation to the undercliff in going, and to return to Hayburn Wyke by the cliff-top. It had been stated that members accompanying this party were to be prepared to do some stiff climbing, this was fully borne out by experience. This contingent was under the guidance of Mr. W. J. Clarke, also of Scarborough.



Permission for the investigation of the district had been kindly granted by Messrs. J. W. Woodall, M.A., J.P., S. Day, and Peter Tissiman, all of Scarborough.

In order to reach their homes the same night several members left by an early train, and it was fortunate they did so. At 5.30 the remainder gathered round the tea tables in the Hotel, and afterwards moved into the field between the hotel and the station, for the purpose of holding the usual meetings. The Sectional Meetings

were first held, and at 7.0 o'clock were followed by the General Meeting, Mr. Charles P. Hobkirk, F.L.S., presiding. The minutes of the previous meeting being taken as read, the following four new members were elected, viz.:—Messrs. Thomas Carnell, Halifax; R. F. Dawson, Bradford; H. S. Holmes, B.Sc., Skipton; and A. C. Holtby, Boroughbridge. On calling the roll of Affiliated Societies, it was found that the following were represented: Liversedge, Bradford, Leeds, Sheffield, Dewsbury, Malton, Hull, Halifax, Cleveland, and Scarborough Naturalists' Societies; Leeds and Hull Geological Societies; Scarborough Philosophical Society; and the Conchological Society.

On the motion of Mr. F. Fielder Walton, F.G.S., seconded by the Rev. A. Powys, M.A., a vote of thanks was passed to Messrs. J. W. Woodall, M.A., J.P., Peter Tissiman, and S. Day for granting permission to visit their respective holdings; and to Messrs. Edward R. Cross, W. J. Clarke, C. Fox Strangwayes, F.G.S., M. B. Slater, F.L.S., George E. Massee, F.R.M.S., Rev. W. C. Hey, M.A., Jas. H. Rowntree, Charles D. Head, and J. A. Hargreaves for leading parties or contributing to the excursion-programme.

The Sectional Reports were then presented, and the following accounts have since been supplied.

For the Vertebrate Section, Mr. Edgar R. Waite, F.L.S., one of the ex-Secretaries, furnishes the following report:—It is a very rare occurrence that the Vertebrate Section is not represented by one or more of its officers, but such was the case on the present excursion. In accordance with the arrangements stated on the excursion-programme, the party, nine in number, was conducted by Mr. W. J. Clarke, of Scarborough, and included, in addition to its leader and the writer, Messrs. W. Gyngell, H. Simmonds, and younger followers attached to the Scarborough Societies. After leaving the hotel the party crossed the Hayburn Beck, and proceeded along the cliff top to the north of the Wyke. Many Common and Herring Gulls were either flying a short distance from the land, or following the plough in the neighbouring fields. Mr. Clarke, who was some distance ahead, saw a single Great Black-backed Gull. Occasionally a Cormorant would sail past beneath the cliff, looking scarcely larger than the Jackdaws nesting freely beneath the summit, in company with a Kestrel, which flew out on the approach of the party. It was expected that the Stock Dove would be seen, but such was not the case; and although House Martins were very numerous, it was not certain that they were breeding in the cliffs. After proceeding for about two miles, the word was given to descend, and then began a somewhat hazardous undertaking, the party moving slowly in Indian file,

sometimes finding the ghost of a trace of a path, but more frequently nothing whatever to indicate the course to be pursued; however trusting to their leader, they were at length safely piloted to the portion of the cliff known as the undercliff. When on the cliff top one noticed what seemed to be a dense scrub, but it appeared to become larger, as the descent was made, until it was found to consist of trees of by no means small size. The foot of the trees was clothed with a mass of briars, which made progress exceedingly difficult, and even painful. Redstarts were very common, and probably nested among the rocks, as many young ones were flying about. The Linnet was also to be observed here, and a Bullfinch's nest was found, although the bird was not seen. Magpies, Crows, and Starlings were by no means absent, and nests of the Ring-Dove and Snipe were found. The ponds were in due time reached, but the only vertebrates they appeared to contain were some myriads of tadpoles. The cliff was ascended by a very easy path, and the party gently proceeded in the direction of Hayburn Wyke. In the woods the Whitethroat, Garden, Willow, Wood and Chiffchaff Warblers were more or less common, and eggs of the Redstart, Chaffinch, and Greenfinch were found. A Creeper was observed, and a nest of the Grey Wagtail seen, close to the beach. At the meeting a non-ornithological member stated that he had seen a woman carrying a young Owl, but did not know the species. Mr. Clarke has since written: 'After leaving the meeting I crossed Cloughton Moor in company with Mr. Simmonds, and here saw a Nightjar, and heard the Landrail. Coming down to Cloughton we met a woman carrying a young Long-Eared Owl, probably the one seen earlier in the day.' 45 birds in all were recorded, of which 32 are residents and 13 summer visitors. Eggs of five and young of six species were observed, and are marked on the following list. The only mammal recorded during the day was the Common Rabbit, and of Reptiles the Viper and Common Lizard were obtained. A Frog and the Tadpoles before mentioned represented, no doubt, only one species of Amphibia, and the Common Trout was the only representative of Freshwater Fish. The Marine Fishes recorded were the Black Goby, One-spotted Goby, and the Shanny.

The asterisks (*) denote that eggs, and the daggers (†) that young birds were observed.

Mammal.

Rabbit.

Birds.

RESIDENTS.

*Song Thrush.
Blackbird.
Redbreast.
Hedge Accentor.
Dipper.
†Blue Tit.
Wren.
Pied Wagtail.
*Grey Wagtail.
Meadow Pipit.
Tree Creeper.
Greenfinch.
House Sparrow.
Chaffinch.

Linnet.
Corn Bunting.
Yellow Bunting.
Starling.
†Magpie.
Jackdaw.
Crow.
Rook.
Skylark.
†Long-eared Owl.
Kestrel.
Cormorant.
*Ring Dove.
Lapwing.
*Snipe.
Common Gull.
Herring Gull.
Great Black-backed Gull.

SUMMER VISITORS.

*†Redstart.
†Whitethroat.
Garden Warbler.
Chiffchaff.
†Willow Warbler.
Wood Warbler.
Sedge Warbler.
Tree Pipit.
Swallow.
Martin.
Swift.
Nightjar.
Landrail.

Reptiles.

Viper.
Common Lizard.

Amphibian.

Common Frog.

Fishes.

Trout.
Black Goby.
One-spotted Goby.
Shanny.

For the Entomological Section, Mr. A. E. Hall, F.E.S., Sheffield, Secretary, reported that it was but poorly represented, only the following members being present: Messrs. W. Gyngell, Scarborough; A. E. Hall, Sheffield; H. W. Head, Scarborough; T. A. Lofthouse, Middlesbrough; and M. L. Thompson, Saltburn-by-the-Sea. So far as general appearance is concerned, the locality should be a productive one, though one cannot judge by a single day's collecting, as it takes a season's hard work to form any idea of what a locality may contain. A very fair number of species of both Coleoptera and Lepidoptera were taken during the day, the other orders not being worked for, although the Cleg (*Hæmatopota pluvialis*) was noted. Mr. Thompson has furnished the list of Coleoptera, and Messrs. Lofthouse and Head the list of Lepidoptera which were taken or observed during the excursion.

Coleoptera :— *Cicindela campestris*, *Notiophilus biguttatus*, *N. aquaticus*, *Bradycellus similis* (all Cloughton Moor), *Harpalus proteus* (Hayburn Wyke), *H. ruficornis* (Cloughton and Beast Cliff), *H. rufibarbis* (Beast Cliff), *Pterostichus madidus* and *P. vulgaris* (Cloughton), *P. niger* (Beast Cliff), *P. diligens* (Ringing Keld Bog), *Calathus cisteloides* (Cloughton), *C. melanocephalus* (Cloughton Moor) *Trechus minutus* (Ringing Keld Bog), *Cercyon flavipes* (Cloughton), *Choleva fumata* (under a carcase, Cloughton Moor), *Tachyporus chrysomelinus*, *Tachinus rufipes*, and *Adalia obliterata* (Cloughton), *Coccinella* 10-*punctata* (on herbage, Cloughton Moor), *Brachypterus urticæ* (on nettles, Cloughton), *Antherophagus pallens* (on Cloughton Moor), *Athous niger* (on herbage, Cloughton and Beast Cliff), *A. hæmorrhoidalis* (on herbage, Cloughton), *Agriotes pallidulus* (on herbage, Cloughton and Hayburn Wyke), *Dolopius marginatus* (Hayburn Wyke), *Helodes minutus* (on sallows, Ringing Keld Bog), *Campylus linearis* (one on sallow, Cloughton Moor), *Cyphon niti-*

dulus (on oak, Cloughton Moor), *C. variabilis* (on sallow, Cloughton Moor), *Telephorus bicolor*, *T. flavilabris*, *Rhagonycha pallida*, *R. limbata*, *Malthodes marginatus*, and *M. minimus* (Cloughton and Hayburn Wyke), *Strangalia armata* (one on herbage, Hayburn Wyke), *Adimonia suturalis* (on heath, Cloughton Moor), *Crepidodera ferruginea* (on herbage, Cloughton), *Phyllotreta undata* (on herbage, Cloughton), *Sphæroderma cardui* (on thistles, Cloughton), *Pyrochroa serraticornis* (Beast Cliff), *Apion apricans*, *A. pisi*, *A. violaceum*, *A. humili*, and *Otiorrhynchus picipes* (on herbage, Cloughton and Hayburn Wyke), *O. ovatus* (Beast Cliff), *Strophosomus coryli* (on bracken, Cloughton Moor), *Polydrusus cervinus* (on herbage, Cloughton Moor), *Phyllobius urticæ* (on nettles), *P. pyri* (on nettles), *P. argentatus* (on firs), *P. viridicollis* (on herbage), and *Ceuthorhynchus pollinarius* (on nettles, Cloughton), and *C. ericæ* (on heath, Cloughton Moor). All the above are common, and more or less widely distributed, except *Antherophagus pallens*, *Campylus linearis*, and *Strangalia armata*. These are more local, but none rare. The last is common in the Midlands, but rarer further north.

Lepidoptera:—*Pieris napi* (Beastcliff), *P. rapæ* (common), *Argynnis aglaia* (a specimen taken near Cloughton), *Epinephele janira* and *Chortobius pamphilus* (common), *Polyommatus phlæas* (near Cloughton), *Lycæna alexis* (common), *Smerinthus populi* (ova and larvæ common in Stainton Dale), *Sesia bembeciformis* (near Cloughton), *Hepialus humuli* (Beast Cliff), *H. velleda* (Cloughton Moor), *H. lupulinus* and *H. hectus* (Cloughton Moor and Hayburn Wyke), *Bombyx quercus* var. *callunæ* (Cloughton Moor), *Dicranura vinula* (larvæ, Ringing Keld Bog), *Notodonta camelina*, *N. dromedarius*, and *N. zic-zac* (ova and larvæ near Cloughton), *Xylophasia rurea* (near Cloughton), *Noctua C-nigrum* (Beast Cliff), *Tæniocampa instabilis* and *T. stabilis* (larvæ, Stainton Dale), *Polia chi* (larvæ near Cloughton), *Plusia gamma* (common), *Anarta myrtilli* (Cloughton Moor), *Rumia cratægata* (common), *Selenia illustraria* (larvæ near Cloughton), *Phigalia pilosaria* (larvæ near Cloughton), *Boarmia rhomboidaria* and *Venusia cambricaria* (Hayburn Wyke), *Strenia clathrata* (Beast Cliff, common, and Hayburn Wyke), *Aspilates strigilaria* (Cloughton Moor), *Lomaspilis marginata* (Stainton Dale and Hayburn Wyke), *Larentia didymata* (common), *L. pectinitaria* (Cloughton Moor), *Emmelesia affinitata* (Hayburn Wyke), *E. albulata* (Cloughton Moor), *Hypsipetes elutata* (larvæ near Cloughton Moor), *Melanthia ocellata* (Cloughton Moor), *Melanippe subtristata*, *M. montanata*, *Camptogramma bilineata* and *Eubolia mensuraria* (Hayburn Wyke), and *Pionea forficalis* (Cloughton Moor).

The Conchological Section was represented by two of its officers, Rev. W. C. Hey, M.A., of York, President, and Mr. Lewis B. Ross, F.C.S., of Driffield, one of the Secretaries. Other members taking part in the work of the section were Mr. J. A. Hargreaves, of Scarborough, Mr. T. A. Lofthouse, of Middlesbrough, Mr. A. H. Pawson, of Farnley, Mr. W. Denison Roebuck, F.L.S., of Leeds, etc. The President and Secretary not being able to remain to the meeting, the report was drawn up by Messrs. Lofthouse and Roebuck as follows. Messrs. Ross and Lofthouse began their work at Cloughton Station. They immediately found *Helix aspersa* in the village, clinging to the old walls which in this part of the county do duty for the hedges of Holderness. Thence passing along in the direction of the moor, towards Hayburn Wyke, *Helix nemoralis* was met with, and further along, in displacing the stones in the walls skirting the high road, *H. caperata* and *H. rotundata* were found; and under stones and wood, and on the grass, were seen *Zonites nitidulus*, *Helix virgata*, and *H. sericea*. The only water-shell was the ubiquitous *Limnæa peregra*, found in a small stream on the roadside, which completes the list so far as Mr. Ross's party was concerned. Mr. Lofthouse continued his investigations after parting company with Mr. Ross, finding *Vitrina pellucida* and *Succinea putris* near Cloughton, *Zonites cellarius*, *Z. alliarius*, *Z. nitidulus*, *Z. purus*, *Z. crystallinus*, *Z. fulvus*, *Pupa umbilicata*, *Vertigo edentula*, and abundance of *Carychium minimum*, in the woods at Hayburn Wyke. The Rev. W. C. Hey noticed living specimens of *Z. alliarius* and dead ones of *Helix caperata* at the Wyke. Mr. W. Denison Roebuck, who accompanied the ornithological party which worked the undercliffs north of the Wyke, as far as the ponds at the Beast Cliff, noted several examples of *Limax arborum* var. *nemorosa*, *Clausilia rugosa*, *Bulimus obscurus*, *Helix hispida*, *Limax agrestis*, *Arion minimus*, *A. bourguignati*, *A. ater*, and *Limnea truncatula*, in addition to several species of *Zonites*. Mr. A. H. Pawson found *Helix arbustorum* near Hayburn Wyke, and Mr. J. A. Hargreaves collected *Pupa ringens* in the same vicinity, while examples of *Ancylus lacustris* were found by Mr. Hargreaves on leaves of water-lilies brought by one of the botanists from one of the ponds under the Beast Cliff. The total number of species amounted to 28, composed of 2 water shells, 5 slugs, and 21 land shells—about an average number for a day's work.

The Phanerogamic report of the Botanical Section was presented by Mr. J. A. Erskine Stuart, of Heckmondwike, one of the Secretaries of the section:—Under the direction of Mr. Edward R. Cross, the botanical party explored Ringing Keld Bog, near Cloughton, where

they observed *Ranunculus lenormandi*, *Habenaria viridis*, *Listera cordata*, *Drosera rotundifolia*, *Pinguicula vulgaris*, *Senecio sylvaticus*, *Parnassia palustris*, *Anagallis tenella*, *Narthecium ossifragum*, *Epipactis latifolia*, and *Habenaria chlorantha*. On the way to the Wyke, near to the Druidical circle, *Gymnadenia conopsea* was seen in great luxuriance, and on the Wyke *Orchis pyramidalis*, *Vicia sylvatica*, and *Inula helenium* were noted. Altogether 226 species were observed.

Mr. M. B. Slater, F.L.S., Secretary for Cryptogamia, reported that the bryologists first searched a portion of moorland and boggy ground, on the west side of the Scarborough high-road, a short distance from Hayburn Wyke railway-station. *Sphagnum subsecundum* Nees and *S. cymbifolium* Ehrh., both widely distributed species, were met with in the bog, the latter one having fruiting capsules. The following mosses were also gathered:—*Bryum capillare* L. (fruiting), *Dicranella heteromalla* Hedw., *Tetraphis pellucida* L. (with gemmæ), *Plagiothecium undulatum* L., *P. denticulatum* L. (fruiting), and *Hypnum commutatum* Hedw. The Hepaticæ gathered were *Lepidozia reptans* L. (in fine fruit), *Cephalozia lammersiana* Hüb. (do.), *Jungermania crenulata* Sm., *Diplophyllum albicans* L. (with abundance of fine perianths), and *Jungermania capitata* Hook., a large form of which was met with in fine fruit, growing on stones on the moor, and was the most interesting plant gathered in this section. The wood near the Wyke, the rocky ground by the stream-side, and near the mouth of the Beck, were next explored. Of the mosses met with here, the almost ubiquitous *Tortula muralis* L. was abundant in fine fruit on the rocks and stones; *Limnobium palustre* L. was fruiting abundantly on stones by the stream; *Eucladium verticillatum* L., on dripping rocks, without fruit; *Dichodontium pellucidum* L., on stones; *Brachythecium plumosum* Swartz., abundant on stones by the stream; *Trichostomum tophaceum* Brid. was also found with abundance of old fruit capsules, growing in fine patches near the mouth of the stream. November is the season when the fruit capsules of this moss are in the most perfect condition, and when no doubt fine specimens of this plant might be got in this locality. The Hepatics gathered were *Jungermania riparia* Taylor, plentiful on wet stones near the stream-side, and *Frullania dilatata* L., with perianths, abundant on the trees. No Orthotrichums were seen on the trees. This genus of mosses is much less abundant in the low country than it was some years ago. All the plants seen in this section were of species that are of general distribution. No very rare forms were found. During the summer months the localities at higher elevations, at the upper sources of our mountain streams, are the places where the rarer mosses and hepatics are to be gathered.

With regard to Fungi, Mr. H. T. Soppitt reported that Cloughton Moor, with Ringing Keld Bog, the adjacent woodland, and the nicely-wooded glen of Hayburn Wyke, were found to be a splendid mycological hunting-ground, although it was too early in the season for most fungi. No doubt at a later date the district would well repay a visit. About 20 species of fungi were collected, the most interesting of which were the Uredinei. Amongst the most important of these were *Puccinia dioicæ* Magnus, the æcidiospores being not uncommon on *Carduus palustris*; *Melampsora repentis* Plowr. (*Cæoma orchidis* Alb. & Schw.) on *Orchis latifolia* and *Salix repens*; and *Coleosporium senecionis* Pers., which was abundant on *Senecio sylvatica*, and the young trees of *Pinus sylvestris* in proximity bore traces of having been invaded by the earlier stage of the parasite (*Peridermium pini* Chev.). It may also be added that *Galium verum* was found near Scarborough, distorted to a great degree by the presence within its tissues of *Melanotænium endogenum* DeBary, a remarkable species of Ustilagineæ.

For the Geological Section Mr. Charles Brownridge, F.G.S., writes:—The meeting of the Yorkshire Naturalists' Union devoted to the investigation of a portion of the Yorkshire coast is always a popular one with geologists of our broad-acred shire, and therefore it was not a matter of great surprise that a good contingent travelled from our sooty and smoky towns of the West Riding to investigate the interesting sections to be seen in the cliffs between Cloughton and Hayburn Wykes. The knights of the hammer had to be astir with the early cock-crow to get on the ground in good time, and, being joined at Scarborough by the East Riding and local contingents, when Cloughton was reached and the party organised, it was found to be a numerous and typical one from all parts of the county. It was here found, unfortunately, that there was no leader or guide to take charge of the party, as is usual on these excursions, the section having had at various times the assistance of gentlemen whose names are intimately connected with the geology of the district visited; but not dismayed by this, the President of the Section, Mr. C. D. Hardcastle, getting the party together, a start was made across the fields for Cloughton Wyke, permission not being allowed the members to go along the railway. Walls and fences were soon surmounted, and the party quickly arrived at the starting-point of the day's investigation. A descent was speedily made to the foot of the cliffs to Hundale Point, where the place was found already in possession of a Scarborough geologist, who had early got on the ground, and was fast bagging fine fossils to enrich his collection.

The whole of the district comprised in the day's investigations lies on the Lower Oolites, which are at this part of the coast very finely developed. Starting at the south end of the district and working up north, the various beds were clearly seen in descending order. At Hundale the basement beds of the Upper Estuarine series are met, and below comes the Scarborough or Grey Limestone series, which is the most important marine series of the Lower Oolites, consisting of a series of siliceous and calcareous bands with shaly partings, and having a considerable thickness of shale in the upper part, and whose massive sandstone base forms the fine reefs of Hundale Scar. Typical fossils having been got, the party proceeded around the Wyke and examined the fine sections in the Middle Estuarine series which are there exposed. This is the principal coal-bearing horizon of the Lower Oolites, consisting generally of shales with bands of sandstone, containing abundance of plant-remains. An old drift or day-hole was noted in the cliff, where evidently the soft or Oolite jet had been worked from the outcrop. This series attains at this point a total thickness of over 103 ft., and is topped by an evenly-bedded, slightly calcareous massive sandstone, which, from the fossils found at its base, would seem to be a passage bed marking a gradual change from the marine to a freshwater condition. Continuing along the shore, noting in passing many enormous slips that had taken place in the cliffs, the party were soon busy clambering up and slipping over enormous boulders that bestrewed the foreshore; no nice sandy path could the fast-tiring geologist get to ease his aching limbs, while the high cliffs effectively shut out any chance of gaining the green carpeted summit. Slowly and heavily plodding along with thoughts of pity for any poor mariner who should by stress of weather be driven on such a rock-bound coast, where in times of storm the undercliff is washed with a seething mass of foam, the party reached the very fine section of the Millepore bed, when a refreshing halt was made to examine this interesting marine bed and regain breath. The rock here forms an important and extensive reef of massive and ferruginous sandstone, running out at low water into the sea, finely weathered, and formed into a floor resembling huge flags with open joints, and in many instances recalling the deep-weathered joints of the carboniferous limestones about Ingleborough. Rising up in the cliff towards the north, this bed can be traced as far as Hayburn Wyke. Passing along further north, and still over the sharp and relentless boulders, to Iron Scar, the Eller Beck bed was next examined. This band of marine formation, capping the estuarine and freshwater beds of the Lower Estuarine Series, consists of over 17 ft. of sandstones, ironstones,

and shales, and is in parts very rich in fossils, which soon resulted in the sharp ring of the hammer and chisel being heard, and the already tired and jaded scientist being further weighted down with many fine specimens.

Pushing along until Hayburn Wyke was safely reached, and the welcome ripple and splash of its pretty waterfall greeted the ear, a cursory glance was taken of what seems to be a detached or disturbed portion of the cliff. Whether this is caused by a fault or not the geological surveyors have not yet determined, but that some considerable action has caused this condition of affairs seems evident. The pretty Wyke of Hayburn is typical of the scenery to be found amongst the Oolitic rocks; rain, rivers, and atmospheric agencies having carved out many charming dales over the area occupied by these rocks, which occupy a large part of East Yorkshire, extending from Filey through the Vale of Pickering over the Hambleton and the Cleveland Hills. This formation derives its name from the characteristic grains constituting many of its beds, which resemble the roe or egg of a fish, consisting of little rounded balls, which, when broken, show under the magnifying glass concentric layer upon layer built up around a small nucleus or centre. What have been the conditions during the formation and growth of these rocks? It would seem that a similar series of events, on a smaller scale, to those that took place during the formation of the Coal Measures were occurring—sediment brought down by a large river from the carboniferous area west and north-west of the Vale of York, the level of the land varying considerably; at times a shallow sea rich in marine life, and again a low-lying tract subject to periodical inundations. The fauna contained in these beds indicate generally a brackish condition of the waters during the deposition of the beds, with an occasional bursting in of the sea, giving to certain of the beds a distinct marine character.

The examination of the exposed sections being complete, the party at once proceeded to the Hayburn Wyke Hotel, where they showed up in marked contrast by their travel-stained and weary look against the freshness of the recent arrivals, who had come on by later trains to join the party. After a refreshing tea, the Sectional Meeting was held in the open air, Mr. C. D. Hardcastle in the chair. Bags being emptied, it was at once seen that a very rich and representative collection had been got together, most of the characteristic fossils of the various beds seen during the day being among the spoils. These having been arranged and named, Mr. S. Chadwick, F.G.S., one of the Sectional Secretaries, reported on the day's work to the General Meeting, and

stated that the Section had had a very good and prolific day, among some of the finest sections to be seen of the series. The members then slowly wended their way to the station, where a long wait was experienced before the welcome sight of the iron horse came into view, which carried most of the members back to the Queen of Watering-places, arriving there too late for the West Riding members to catch their train home. Those who were not compelled by circumstances—as, unfortunately, the clerical members of the party were—too tired to experience further vicissitudes, sought out friendly rest and shelter for the night. All felt that a good hard day's work had been done, with favouring weather to assist in making the excursion a success; and although early in the morning members were heard expressing wonder at the short distance to be covered during the day's proceedings, all finished with profound respect for that short distance, and will for a long time vividly remember the climb and tumble over the rough and rocky shore to the music of the rolling surf, at times commingled with the startled cry of the birds disturbed from their homes high up in the cliffs.

On behalf of the Marine-Zoology Committee, its Secretary, Mr. J. Percy A. Davis, of Halifax, reported that the coast in the neighbourhood of Hayburn Wyke being extremely rough, causes any large waves to break with great force on the shore, and consequently destroy all but the most hardy marine objects. Under these circumstances a very long list was impossible. Generally, it was found that the sedentary shells—i.e., *Chiton*, *Patella*, etc.—were the most common, although the more delicate sea-anemones of common type were very abundant. *Chiton fascicularis*, *C. ruber*, *C. cinereus*, *C. asellus*, *Patella vulgata*, and *P. pellucida* were obtained in large quantities, and *Trochus cinereus* was also very abundant, although the only species found. *Littorina rudis*, *L. littorea*, *L. tenebrosa*, *L. patula*, *L. littoralis*, and *Purpura lapillus* were common. The only fishes taken were *Blennius pholis* (Shanny), *Gobius niger* (Black Goby), and *G. unipunctatus* (One-Spotted Goby). Three sea-anemones were found, one (*Actinia mesembryanthemum*) being common, while the others were the only two of their species obtained, and have not yet been determined. The common Starfish (*Uraster rubens*) was taken, and *Solaster papposa* (Sun Star) was reported from Cloughton Wyke. The Zoophytes taken were *Sertularia filicula* and *Flustra foliacea*, and the only sponge was the common *Tethya*. Eggs of the Whelk and Purpura were obtained, but only very few specimens. The Crustacea included *Maia squinado* (Spider Crab), the Sandhopper (*Talitrus locusta*), Shrimp (*Crangon communis*), Hermit Crab (*Pagurus bernhardus*), and the common Green or Dog Crab.

A vote of thanks passed to the chairman, on the motion of Messrs. John H. Phillips and W. W. Reeves, terminated the proceedings so far as the meeting was concerned, but! aye, but!! shortly afterwards the members proceeded to the railway platform, and waited! waited!! waited!!!—5 minutes! 10 minutes!! 15 minutes!!! still no train—grave apprehensions were expressed about making the various connections at Scarborough; 20 minutes! 40 minutes!! all hope had now fled. Five minutes later the train came puffing into the station, and speculation was rife as to whether the station-master's telegraphic request would be the means of detaining the Leeds train, but it was a vain hope. On arriving at Scarborough it was found that the train had gone! and about thirty persons were stranded for the night. The station-master was besieged en masse, and the poor fellow sent telegrams here and telegrams there, until, having exhausted their benedictions on the railway company, the enraged party departed, like a swarm of bees, to seek accommodation for the night. Let us hope that on Sunday morning they rose from their couches with thoughts better suited to the day.—E.R.W.

NOTES AND NEWS.

Here is a 'fine specimen' of newspaper botany, for which we are indebted to Mr. Wm. Whitwell, who copied it verbatim from the 'Glasgow Evening News.'—'ALPINE PLANTS ON THE CAMPSIE HILLS. A fine specimen of the Alpine plant *Gussie Parnassium* was recently found growing on the top of Tomtain, one of the spurs of the Campsie Range. The flower is of a waxy appearance, and pure white. The appearance of this plant on the hills of the West of Scotland is very rare.' Mr. Whitwell adds that: '*Gussie Parnassium*' decidedly 'caps' the 'grass upon nasus' quoted by Mr. F. Arnold Lees as a name for *Parnassia palustris*, on p. 251 of the 'Flora of West Yorkshire.'

RECENT VIEWS ON THE DEVELOPMENT OF THE PECTORAL FINS IN FISHES.

The Development and Morphology of the Pectoral Fins in Teleostean Fishes: A Contribution to the Theory of the Paired Limbs in Vertebrates. An Inaugural Dissertation by EDWARD E. PRINCE, Professor of Zoology and Comparative Anatomy in St. Mungo's College, Glasgow, 1890.

Prof. Prince's name will be familiar to many readers of this journal. At one time a zealous Yorkshire zoologist, and for some years engaged in investigations connected with the Scottish Fisheries, he was appointed to a scientific chair in Glasgow about a year ago. The address which he gave on his induction has been published in 4to form, 24 pp. with two plates. It is upon the breast fins of bony

fishes, and embraces some interesting researches, carried on, as a prefatory note informs us, under the auspices of the Elizabeth Thompson (U.S.A.) Science Fund. Prof. Prince was wise in his choice of a subject. His own researches appeared to him to give some needed light upon the meaning of those bony elements which compose the pectoral fin of the cod and other fishes. Instead of indulging, at his inauguration as an academic teacher, in vague generalities upon scientific pursuits, or urging the claims of his own subject, natural history, he presented a summary of certain results of his work; connecting them with the researches of continental and American workers in the same field. Prof. Prince succeeds, we think, in exposing the error of which many eminent anatomists are guilty, and shows that these paired fins in, say, the cod, are of real importance in elucidating the true nature of the limbs in the Vertebrata. We may not accept all that the author sets forth as to the identification of the various bones in the fin and shoulder girdle; but just as the hand can be derived from the lower form of limb, the reptilian paddle, and the paddle can be regarded as a transformed shark's fin, so the paired fins of bony fishes can be shown to arise in the same way as the Selachian, and to have quite as much morphological meaning. Prof. Prince's researches support Balfour and Thacher's view, in opposition to that of Gegenbaur and the German anatomists. The latter regard the fish's fin as a transformed gill-appendage, and the shoulder as an altered gill-arch—a view which is really but a modification of Owen's older interpretation. Prof. Prince, we think, should not have omitted to notice that the presence of paired limbs is somehow related, in Vertebrates, to the presence of jaws. Fishes like the lamprey, without jaws, have no limbs. But perhaps Prof. Prince would derive the mouth cartilages from elements other than branchial. Be that as it may, it appears to be incontrovertible that the bony fish's fin arises, like the shark's, separate from the girdle in a horizontal plane, and cannot be a modified branchial appendage.

In this address much evidence is brought forward, embryological and anatomical, in favour of a return to Cuvier's interpretation, and an acceptance of Balfour's lateral-fin theory. Prof. Prince's view is not that taught by the majority of anatomists, and his lucid and even convincing exposition, in this notable inaugural address, is worthy of serious attention. Inaugural addresses in German Universities are often of importance and value, witness those of Rosenberg, Swirski, and others, and Prof. Prince has done well to mark his own inauguration by a contribution of such unusual interest as this.

AGRIMONIA ODORATA ADDED TO THE WEST YORKSHIRE FLORA.

WM. WEST, JUN.,
Bradford.

ON Sept. 10th, 1889, my friend Mr. E. J. Lumb discovered this plant (*Agrimonia odorata* Mill.) on a hedge-bank sloping down to the river Rawthey, near Sedbergh. The specimen from this locality which he recently showed me possesses the characters (such as the declining exterior spines on the scarcely-furrowed calyx-tube, the latter containing two seeds) which distinguish the plant from *A. eupatoria* L. I believe that the species has not previously been recorded for West Yorkshire, Mr. Lees remarking in his Flora (p. 207) that it should turn up about Kettlewell or Grassington.

Sept. 1st, 1891.

NOTES—ORNITHOLOGY.

Cream-coloured Variety of the Skylark at Harrogate.—A beautiful variety of the Skylark (*Alauda arvensis*) was shot on the top of Birk Crag on Sept. 3rd. It was a uniform rich shade of cream all over, with the exception of the crest feathers, which were tipped with a beautiful shade of buff.—RILEY FORTUNE, Harrogate, September 13th, 1891.

Manx Shearwater in Upper Nidderdale.—On Sept. 7th, when on our way to the moors, I was fortunate in discovering, in a house of call, a specimen of the Manx Shearwater (*Puffinus anglorum*), which was obtained just below Lofthouse, last September (1890). It was evidently exhausted when found, and no difficulty was experienced in capturing it.—RILEY FORTUNE, Harrogate, Sept. 13th, 1891.

The Note of the Corn Crake.—I had an opportunity this summer, which, I think, does not often occur, of seeing a Corn Crake in the act of uttering its well-known sound. I was watching it through a hedge, at the distance of a few yards, and it turned its head round over its back, and opened its lower mandible so widely that I could see down its throat, and in that position it gave forth its melodious note.—R. A. SUMMERFIELD, North Stainley, Ripon, 29th August, 1891.

Three Large Species of Birds Building in one Tree.—At Thorpe Wood, Kiveton Park, near Worksop, a Kestrel (*Tinnunculus alaudarius*), Carrion Crow (*Corvus corone*), and Magpie (*Pica rustica*) have each built their nest in one Scotch fir tree, and not 20 feet apart from each other. The two former had their nests in the same tree last year, but the Magpie is an acquisition. Up to the present time each species is bringing up its family in perfect friendliness with its neighbours.—A. E. HALL, Norbury, Sheffield, May 13th, 1891.

Hawfinches near Harrogate.—Three examples of the Hawfinch (*Coccothraustes vulgaris*) were captured during July, in a net or bird-trap, at Wormald Green, near Harrogate, by a railway official. They were kept alive for some weeks, but one of them having died, it was given to Mr. H. Wood, of Harrogate, who brought the bird to me for identification. It was an immature bird, apparently hatched this season, probably in the neighbourhood where, with its companions, it was caught. The Hawfinch, though by no means a common bird in our county, is, perhaps, more so than is usually thought, and nests in several localities, in some cases periodically.—J. BACKHOUSE, Harrogate, 8th August, 1891.

BRITISH DIPTERA.

An Account of British Flies (Diptera). By the Hon. M. CORDELIA E. LEIGH, F.E.S., and F. V. THEOBALD, B.A., F.E.S.—Part I. London: Elliot Stock, . . . 1891.

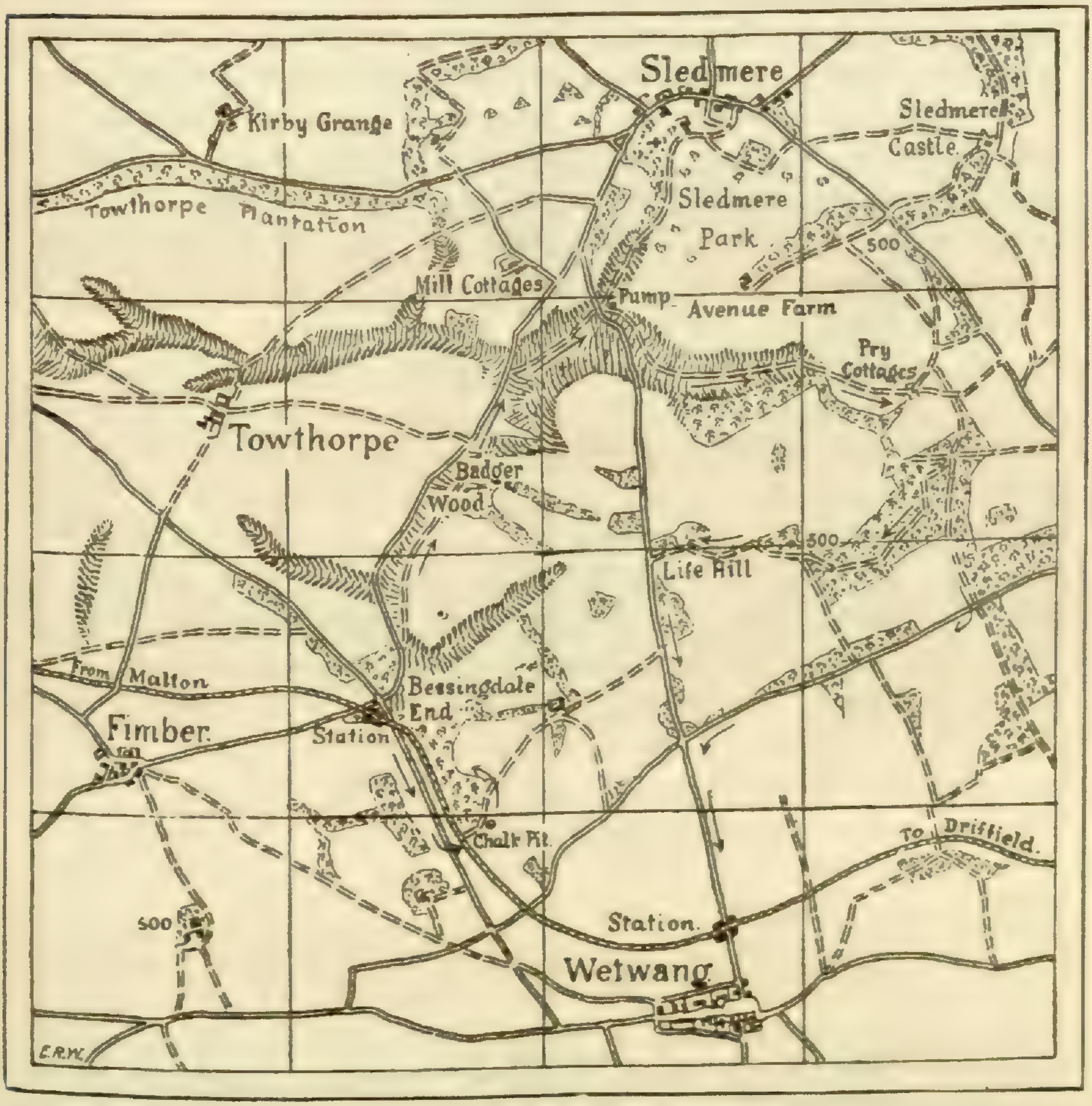
A manual of the British Dipterous Insects has long been wanted, and we are pleased to see that an attempt is being made to supply the deficiency. The instalment before us is part 1, and is priced 1s. How often the parts are to appear is not apparent, inasmuch as there is no introductory or explanatory matter prefixed or upon the cover; and our authors plunge at once into their subject by giving us, as their first chapter, a succinct summary of what is known of the fossil forms of the order. The second chapter deals with the classification of Diptera, preceded by an introductory account of the ancient and modern classification of insects generally. The classification of Diptera adopted by our authors is that of Brauer, as adopted by Verrall in his 1888 List of British Diptera. These two chapters occupy 20 pages, and at page 21 the systematic part of the work begins with Chapter III., devoted to the Fleas, or Aphaniptera, their metamorphoses, classification, larval anatomy, etc., and a brief account of each of the species recognised by Mr. Verrall. We would suggest to the authors that in their account of the species individually they should give all the detail obtainable as to habits, life-history, and distribution. It is somewhat disappointing to refer to a monographic work and find that no localities are given, and in the case of the fleas to read that one species is common on the dog and fox, 'and most other members of the Canidæ,' and that another infests swallows, pigeons, sparrows, 'and other small birds,' when the point of interest is to know exactly what other members of the Canidæ and what other species of small birds are infested. We look forward with pleasurable anticipation to being able to notice the succeeding numbers of this work, whose authors have our best wishes for the success of their labours.

NOTE—MAMMALIA.

Rabbit Swimming across the Irthing.—While out fishing in the Irthing at the beginning of this month, accompanied by my brother, my attention was suddenly called by him to a Rabbit (*Lepus cuniculus*) about 40 yards up stream, which leaped into the water and swam bravely across, though the river was running rather high at the time. As this was a new sight to both of us, we looked on with surprise. In a very short time, however, the cause of the rabbit's swim appeared. A Weasel (*Mustela vulgaris*) came hunting through the grass and weeds on the rabbit's track, right down to the water's edge, where, losing scent, the little creature commenced searching diligently up and down the shore, but, baffled, had finally to give up the chase.—Rev. J. ROBINSON, Walton Vicarage, Brampton, Cumberland, August 19th, 1891.

THE YORKSHIRE NATURALISTS' UNION ON THE WOLDS.

One of the regular recurring events of the August Bank Holiday is the excursion of the Yorkshire Naturalists' Union. The fourth meeting of the year took place on August 3rd, the place selected being Wetwang-on-the-Wolds, for the investigation of the drainage area of York Dale, between Fimber Station and Sledmere. In the



Explanation.—The arrows show the line of route.

excursion-programme, the Rev. E. Maule Cole, M.A., describes the district as presenting as charming a picture of Wold scenery as heart can desire: 'Beautiful woods of Larch, Spruce, and Beech clothe the sides of the dales, intermixed at the base with Lilacs, Laburnums, and other flowering trees.'

Permission for the investigation of their respective estates had been kindly granted by Sir Tatton Sykes, Bart., and Mr. Y. Lloyd Greame. Altogether, between sixty and seventy members and associates attended, including a goodly array of lepidopterists, who had been attracted by the note in the programme that the Marbled White Butterfly occurred in the district.

It is natural that the success attending excursions of this kind should be of a somewhat varied nature. Consisting, as it does, of so many sections, it is seldom that the Yorkshire Naturalists' Union holds a meeting without doing some good work. It may be that of adding to the county list some new species, or perhaps recording a species new to the particular district in which the excursion takes place. Sometimes it may be a mammal, sometimes an insect or a mollusc, not infrequently a plant or, as on the present occasion, meeting with a form which has been lost sight of in the county for many years. Undoubtedly the 'find' of the day was the Marbled White Butterfly (*Arge galatea*), which has been regarded as extinct in Yorkshire for more than twenty years.

Several members had been on the ground early, and had spent some time in investigating the woods in the vicinity of Bessingdale End. The main body arrived on the scene about half-past eleven, and were met by the Rev. E. Maule Cole, M.A., the Vicar of Wetwang, an old and prominent member of the Union, under whose charge the excursion was practically conducted. Leaving Fimber Station, the party proceeded some distance up York Dale and then divided, some continuing with their leader, and others, bent on individual research, roaming through the beautiful woods and grassy valleys, or settling down to quiet work in the chalk-pits, which are numerous in the district. It would be impossible (and unnecessary) to chronicle the routes taken by each party, but Mr. Cole and his followers investigated York Dale, entered Badger Wood, and thence worked their way to Wetwang.

The time fixed for tea was four o'clock, and about this hour the party began to reunite at the Black Swan Inn, Wetwang. A five hours' ramble in the open air is well calculated to induce a good appetite, even in the most dyspeptic individual, and no doubt everyone did justice to the fare provided.

After this part of the programme had been rehearsed, the members adjourned to the Schoolroom, which had been kindly placed at the disposal of the Union by the Vicar.

The sectional meetings were, as usual, held first, and at 5.15 were followed by the general meeting, under the chairmanship of the Rev. W. Fowler, M.A. A whisper having gone round that many

members would have to leave soon in order to reach their homes the same day, the minutes were taken as read.

Representatives from the following 17 Societies responded to the roll call:— Ovenden, Wakefield, Liversedge, Leeds, York, Malton, Hull, Cleveland, Ackworth School, Scarborough, and Huddersfield Naturalists' Societies; the Conchological Society; Leeds Geological Association; the Halifax, Hull, and Goole Scientific Associations; and the Scarborough Philosophical Society.

A vote of thanks was then passed to Sir Tatton Sykes, Bart., and Mr. Y. Lloyd Greame for granting permission for the Union to investigate their estates, to Mr. Cole for leading the excursion, and also to Mr. M. B. Slater, F.L.S., who, together with Mr. Cole, had assisted the Hon. Secretaries by contributing information concerning the district for the excursion-programme.

A brief outline of the day's work of each section was then presented by the respective officers in charge, and their reports have been supplied as follows:—

The report of the Vertebrate Zoology Section was read by Mr. Thomas Bunker, of Goole, an ex-President of the Section, who mentioned that Mr. Edgar R. Waite, F.L.S., and himself were the only representatives on the ground.

Mr. Waite writes:—The most noticeable aspect of the district is the entire absence of water, not a stream or brook or ditch to be seen anywhere. This is owing to the geological formation, it being wholly chalk, which at once allows any rain to pass through it. The duck ponds and cattle 'drinks' are artificial, being puddled with clay. The water in these places is not by any means clear, and scarcely attractive to birds or small mammals, such as the Water Vole and Water Shrew. In one of these ponds, however—which was partially dried up, and appeared as though it had not been used for many years—the water was clean, and was tenanted by a few Smooth Newts, Sticklebacks, and Water Beetles. Thirty-seven birds were observed, of which nine were summer visitors, the remainder being residents. A full list of the Vertebrates recorded on the excursion is appended:—

Mammals.

Hedgehog.
Red Field Vole.
Rabbit.

Birds.

RESIDENTS.

Song Thrush.
Blackbird.
Redbreast.
Goldcrest.
Hedge Accentor.
Great Tit.
Coal Tit.
Blue Tit.
Wren.
Pied Wagtail.
Meadow Pipit.
Greenfinch.
Sparrow.
Chaffinch.
Linnet.
Corn Bunting.
Yellow Bunting.
Starling.
Jay.
Jackdaw.

Carrion Crow.
Rook.
Skylark.
Tawny Owl.
Ring Dove.
Pheasant.
Partridge.
Common Gull.

SUMMER VISITORS.

Whinchat.
Redstart.
Whitethroat.
Willow Warbler.
Yellow Wagtail.
Tree Pipit.
Swallow.
Martin. Swift.

Amphibians.

Toad.
Frog.
Smooth Newt.

Fish.

Three-spined Stickleback.

For the Conchological Section the report was given by one of its Secretaries, Mr. Lewis B. Ross, F.C.S., of Driffield, who stated that, having been on the spot a couple of hours prior to the arrival of the 11.20 a.m. train at Fimber Station, he had occupied the time by working the chalk-pit at Bessingdale End. He then conducted a small party, which included Mr. W. W. Reeves, F.R.M.S., of London, Mr. W. Hewett of York, etc., through York Dale and past Badger Wood to the Pump, thence across to Life Hill and along the high road to Wetwang. The chalk-pit furnished an abundance of *Helix ericetorum* and *H. virgata*, and a few *H. rotundata*, whilst a small pond near furnished the only aquatic shell of the day—the ubiquitous *Limnæa peregra*. In Bessingdale Wood *Clausilia laminata* was fairly abundant at the foot of beech trees, whilst among the nettles *Helix arbustorum*, with its varieties *marmorata* and *flavescens*, was found. Passing along York Dale, *Limax agrestis* and, on the beech trees, *L. arborum* were met with, and on the grass *Arion ater* and *A. hortensis* were plentiful. On the beeches *Bulimus obscurus* was fairly common, and amongst dead leaves were found *Vitrina pellucida*, *Zua lubrica*, *Helix aculeata*, *H. pygmæa*, *Carychium minimum*, *Vertigo edentula*, *Zonites fulvus*, *Z. cellarius*, *Z. alliarius*, *Helix hispida*, and *H. sericea*, whilst in other parts of the ramble were met *Helix cantiana*, *H. aspersa*, *H. hortensis*, *H. nemoralis*, *Zonites nitidulus*, *Z. crystallinus*, and *Helix rufescens*. Mr. F. W. Fierke and one or two other Hull conchologists also worked the district, and the slugs they collected were afterwards determined by Mr. Roebuck. They were *Arion ater*, *A. hortensis*, *A. minimus*, *A. bourguignati*, *Limax maximus*, *L. arborum*, and *L. agrestis*. Altogether the total number of species observed amounted to thirty-three, one of them being a water shell and seven slugs, the remaining twenty-five being land shells—not a bad record, considering the small number of collectors on the ground and the limited amount of time at their disposal.

Mr. G. T. Porritt, F.L.S., F.E.S., President of the Entomological Section, reports that the Section was well represented, those taking part in the excursion including Mr. N. F. Dobrée (Beverley),

Messrs. Wm. Hewett and George Jackson (York), Messrs. J. W. Boult, W. F. Baker, and M. Waller (Hull), himself, and others. The most noteworthy event of the day was undoubtedly the capture of *Arge galatea*, which, although mentioned in the excursion-programme by the Rev. E. Maule Cole as one of the species to be looked for, was probably not expected to be found by any member on the ground, as it had been considered by lepidopterists as extinct in Yorkshire for probably twenty or twenty-five years. Great was the gratification consequent on its capture, for it was one of the most interesting events the lepidopterists had had for some time. Other species taken included *Satyrus ægeria* and *S. hyperanthus*, the latter perhaps the most abundant butterfly seen in the district; *Asthena blomeri* and *Venusia cambricaria*, both common, but had evidently been out for several weeks; *Acidalia aversata*, the golden-brown, as well as the ordinary form; *Melanthia albicillata*, *Abraxas ulmata*, *Coremia unidentaria*, *Cidaria immanata*, *Cucullia verbasci* (larvæ), *Scoparia ulmella* (=*conspicualis*), *Tortrix cinnamomeana*, common, and others. In Neuroptera, Mr. Dobrée secured a fine *Æschna juncea*, but the almost entire absence of water no doubt accounted for the great scarcity of members of this group. And the only Orthopteron recorded was *Stenobothris viridulus*, which was common.

Mr. W. F. Baker, of Hull, reports of the Coleoptera:—Although it is the season of the year when the majority of the Coleoptera are passing through the larval state, there was yet a fair quantity obtained. Proceeding along the line from Wetwang Station, *Ocypus olens*, *Pterostichus vulgaris*, *P. anthracinus*, *Harpalus ruficornis*, and *Staphylinus erythopterus* were found beneath the stones lying along the sides. Owing to the rain which was then falling heavily, sweeping hardly repaid the trouble, nothing but the common dandelion beetle being found. Leaving the railway and going up by the chalk-pit to Bessingdale End, *Notiophilus biguttatus* was found in abundance at the side of an old tree-stump, while beneath the loose bark of a decaying tree was a species of *Tæterus*. Proceeding up York Dale, sweeping the nettles produced *Apion radiolus*, *A. niger*, *Longitarsus jacobæ*, *Athous hæmorrhoidalis*, the large Click Beetle, and *Sitones argentatus*, the delicate little green weevil. Under the moss-grown bark of a decayed tree in Badger Wood was a fine specimen of *Carabus violaceus*. Dung Beetles were by no means in abundance, *Cercyon hæmorrhoidalis* and *Geotrupes stercorarius* being all of any note. By shaking newly-mown grass on the Sledmere road were obtained *Chrysomela distinguenda*, two species of *Stenus*, and *Sitones lineatus*, whilst in the hedge-bottom a little further on was *Phædon cochlearia*. *Calathus melanocephalus* was found crossing the road,

and *Anchomenus albipes* on a bank at Life Hill. The only aquatic species found was *Hydrobius fuscipes*, a small vegetarian beetle, which was obtained from a partially dried-up pond.

The Botanical Report was presented by Mr. M. B. Slater, F.L.S., one of the Secretaries of the Section, who writes:—The botanists commenced their exploration immediately on starting from Fimber Station. In walking up the fine York Dale they observed the numerous specimens of some of our rarer indigenous trees and shrubs which have been planted as ornamental fringes to the woods on each side of the dale. Fine examples of the following were observed:—

Berberis vulgaris L.
Euonymus europæus L.
Rhamnus catharticus L.
Pyrus aria Sm.
Pyrus aucuparia Gært.
Cornus sanguinea L.
Viburnum opulus L.
Viburnum lantana L.
Lonicera xylosteum L.
etc.

Although the trees have all been planted, the sub-soil is suitable for their growth. There are not many places where such a fine collection of our rarer trees and shrubs can be seen. At this season they were mostly in young unripe fruit. At a later period of the autumn, in October, when the ornamental fruits of these various trees are ripe, the bright colours of their various fruits, varying in bright scarlet and crimson, black, purple, and orange, give a display which is well worthy of a visit. The trees of each kind are numerous, and extend a distance of a mile or more up the Dale. Some fine patches of *Galium mollugo* L. were seen growing on the slopes of the woods, and large masses of *Epilobium angustifolium* L. var. *brachycarpum* (Leight.) were found decorating some open spaces in newly-made plantations of coniferous and other timber trees.

On reaching Wetwang, the rendezvous for the meeting, the botanists reported at their sectional meeting that upwards of one hundred Phanerogamous plants had been observed during the ramble. The following comprise some of the rarer and most interesting plants seen:—*Papaver dubium* L., growing along with the much more common *P. rhœas* L., near the village of Wetwang; *Thlaspi arvense* L., *Reseda lutea* L., *R. luteola* L., *Hypericum pulchrum* L., *H. hirsutum* L., *Ononis spinosa* L., *Anthyllis vulneraria* L., *Spiræa filipendula* L., *Campanula glomerata* L. The season was too late for Orchids, only the common *Orchis maculata* L. being met with. At the upper part of York Dale the route taken was up an open grass dale, turning westward in the direction for Wetwang. The grassy sides of this dale had large patches of the wiry grass, *Brachypodium pinnatum* Beauv., upon it, and *Bromus erectus* Huds.,

another somewhat rare grass, confined mostly to calcareous districts, was seen. None but the generally-distributed Ferns were seen, such as *Athyrium filix-fœmina* Roth., *Lastrea filix-mas* Presl., and *L. dilatata* Presl.; the last-named being by far the most common fern met with in the woods.

Cellular Cryptogams.—The botanists who made this section of plants their main object of research, confined their exploration mostly to the trunks of the living trees growing up the sides of the dale. Earlier in spring or later in the autumn are more favourable seasons for the collection of this tribe of plants, not many being in active growth at this season. The following Mosses and Hepatics were collected :—

Mosses.

Isothecium myurum Poll.
Hypnum cupressiforme L.
Hypnum resupinatum Wils.
Plagiothecium denticulatum L.
Homalothecium sericeum L.
Leucodon sciuroides L.
Neckera complanata L.
Orthotrichum affine Schrad.
Orthotrichum lyellii H.& T.
Ulota bruchii Hornsch.
Zygodon viridissimus Dicks.

All the above are of general distribution, and were gathered off the trees in the dale. *Thuidium recognitum* Hedw. was growing on grassy banks by the sides of the calcareous roads. This moss has not hitherto been recorded for the East Riding, although it was gathered last year near Sledmere by Mr. G. Webster of York, and also previously in the neighbourhood of Settrington by Mr. Slater. The plant is obtained in the calcareous tracts of the North Riding, in the Howardian tract, and in the neighbourhood of Hovingham, Hildenley, etc. It has, however, hitherto not been gathered in fruit. It is not recorded in Dr. Parsons' list of East Riding Mosses.

Hepatics.

Lophocolea heterophylla Schrad.
Metzgeria furcata L.
Frullania dilatata L., in fruit.
Radula complanata L., in fruit.

All seen on the trees, and of general distribution. A small patch of the rare *Ptilidium ciliare* Nees var. *pulchrum* was gathered from a tree in the wood in York Dale. This is new to the East Riding, and is not in Dr. Spruce's list.

The Rev. E. Maule Cole, F.G.S., reports for the Geological Section :—On reaching Wetwang Station at 9.25 the geologists from Hull, etc., were met by Mr. Wilmot Cole, who conducted the party to a quarry east of the village, and on the northern slope of the slight eminence on which the village is built, chiefly for the purpose of showing the absence of flint in the beds of the Upper Chalk. Returning past the Vicarage, they were met by the conductor, the Rev. E. Maule Cole, F.G.S., who guided them to a quarry on the

southern slope, where the Middle Chalk is found containing flints and curious nodules of chalk, indicating the passage from the Middle to the Upper Chalk. *Ananchytes ovatus* is not uncommon here. After a brief visit to the interesting old church, with its fine Norman font, the party visited a quarry at Rocklands in the Upper Chalk, which yields *Belemnitella mucronata*, but few sponges. Proceeding to Fimber Station, the main body of members from the West were met at 11.30, and a start was made up York Dale. Near Mill Cottages a quarry was inspected in the Middle Chalk, where a fine band of tabular flint, five inches thick, is well exposed. Here, the Hon. Sec., Mr. S. Chadwick, F.G.S., of Malton, obtained many specimens of *Ananchytes ovatus*, a *Micraster*, *Terebratula semiglobosa*, *Rhynconella mantelliana*, several sponges, one in flint, and a beautiful coral. After traversing the dales and woods, and examining the British entrenchments, which form so striking a feature on the Yorkshire Wolds, the conductor took the party to a quarry in the Upper Chalk at Garton Field House (Mr. R. Megginson). Here *Inocerami* occur in profusion, as well as sponge remains, and thick seams of so-called Fullers' earth. It was in this quarry that Mr. Cole obtained his unique sponge—so far unique that it is unknown at the Jermyn Street Museum, and Mr. J. R. Mortimer only thinks that he has one like it in his magnificent collection at Driffield. It is as yet unnamed. During the walk, which was thoroughly enjoyed, Mr. Cole pointed out the accumulations of 'grut' on some of the dale-sides, and attributed them to an Arctic condition of climate; as also, a remarkable depression on a dale side, which seemed to have been excavated by a lateral glacier infringing on the main floor.

The meeting was terminated by a vote of thanks passed to the Rev. W. Fowler, M.A., for presiding, on the motion of the Rev. E. Maule Cole, M.A., seconded by Mr. Samuel Chadwick, F.G.S.

E.R.W.

NOTES AND NEWS.

An important contribution to our knowledge of 'The Slugs of Ireland,' from the pen of Dr. R. F. Scharff, B.Sc., Keeper of the Nat. Hist. Museum at Dublin, has just been published as one of the memoirs of the Royal Dublin Society, and is illustrated by a coloured plate of the animals, and a plate of their anatomy.

The appointment of Organising Secretary to the Somerset County Council Technical Education Committee, at a salary of £400 per annum, has recently been conferred upon Mr. Charles Herbert Bothamley, F.I.C., F.C.S., of Leeds. Mr. Bothamley, who is a native of Lincolnshire, has for some years been assistant lecturer and demonstrator at the Yorkshire College, was at one time a very active member of the Leeds Naturalists' Club, a familiar figure at several of the annual meetings of the Yorkshire Naturalists' Union, and will be much missed in Leeds. Last year, it will be remembered, he was honoured with the post of President of the Photographic Convention of Great Britain and Ireland when it held its meetings at Chester.

ORNITHOLOGY AT DANBY-IN-CLEVELAND.

Forty Years in a Moorland Parish. Reminiscences and Researches in Danby-in-Cleveland. By the Rev. J. C. ATKINSON, D.C.L., author of 'A History of Cleveland,' etc. Macmillan & Co. 1891.

Under this title the author has given us a charming volume; from preface to finish it has been very pleasant reading, and we close the book with regret, wishing that there was more of it. In these days of discontent and increasing restlessness, it is specially pleasant to wander away with the author into the quiet restful dales of North-East Yorkshire, where the conditions of existence have continued for generations less exacting and with less wear to mind and body.

Forty years and upwards is a long time to have spent anywhere, even amongst the busy haunts of men and with plenty of congenial neighbours. The writer's lot in life, however, has been one of comparative seclusion and separation from the world in the upland parish of Danby-in-Cleveland, surrounded by vast and lonely moorlands, and in a comparatively little known and rarely visited district, where, from its very remoteness and seclusion, the manners and customs, folk-lore and folk-speech have continued to linger with little alteration for a longer and to a later period than has, perhaps, been the case in any other part of the kingdom; so that in reading this book we seem to be brought face to face with a distinct survival—a fragment, as it were, stranded on the shores of time, of that renowned Northumbrian kingdom, which at one time extended unbroken from the shores of the Humber to the lowlands of Scotland.

Mr. Atkinson tells us in the preface to the first edition that during his long residence and seclusion in Danby he must have walked 70,000 miles in the prosecution of his clerical duties alone, and much more than twice this for exercise and recreation, and that none of these long miles, however companionless, were really lonely, for to him there was ever matter for reflection and speculation in the beasts and birds, the flowers and insects he came across, the constantly shifting scenery, and the ever-varying atmospheric changes, never twice the same. Years spent thus in these hill solitudes have not been wasted or thrown away, as all will admit who have read these reminiscences.

The book has already been so well received by the public, and favourably reviewed and noticed by the press, that we can afford now to pass over those many interesting chapters relating to the history, geology, antiquities, folk-lore, legends, superstitions, manners, and customs which occupy the greater portion of the volume,

confining our remarks solely to such matters as more appropriately come within the scope of this journal, namely the natural history, and especially the ornithology of the district.

In the two chapters given chiefly to ornithology the writer informs us that one of the boldest and most unabashed of the garden plunderers of berry-fruit at Danby was the Moor Blackbird or Ring Ouzel. In September they collect in flocks of some hundreds, and, in company with the dale Blackbirds, for a time continue to frequent the open moor to feed on bilberries. These becoming exhausted, they make a raid on the gardens, and when the much-grudged supply of fruit is done, fall back upon the scarlet rowan-berries, and after these are finished, they will take their departure for more southern lands, not to appear again till the spring.

Mr. Atkinson warmly defends the useful Starling from the charge of taking strawberries, and with regard to the question which was recently ventilated in this journal, whether it brings off two broods or not in the season, is decidedly of opinion that under certain exceptional circumstances only this is the case, the first eggs or brood having been destroyed—a rule to which the Starling is no exception, and which holds good with many other species also which normally have only one brood.

We regret to learn that the cheerful and harmless Dipper is becoming a rare bird on the Cleveland becks and rills. Formerly, where the author used to see six to ten pairs, he now barely sees one. This scarcity has been brought about through their wanton destruction by the gun-carrying lout, and the same fate befalls the occasional Kingfishers which frequent the 'big beck,' and the rarer Great Spotted Woodpecker in its casual visits to the district. At one time Green Woodpeckers were anything but uncommon, but what with the cutting down of the older timber and slaughter of occasional visitors by bird-murderers, their visits are now very exceptional.

Mr. Atkinson says the Raven has been extirpated during his time; also the Barn Owl, which used to breed in the church tower; and the Wood Owl, if it exists still, is represented by one pair only. The Merlin formerly bred in Danby Low Moor, near to the so-called British village, but this place knoweth them no more, and Mr. Atkinson has not seen a Harrier or Buzzard for this last thirty years. The keepers and watchers,—a class notoriously most ignorant of natural history, notwithstanding their great opportunities—do not as yet appear to have even recognised the valuable services of the harmless Kestrel in destroying the destructive smaller mammals. One of the watchers informed the author one day, in the manner of one who had accomplished a feat, that he had been helping in a raid

on the 'little red hawks' in Crunkley Gill, and that they had killed, little and big, seventeen. A natural consequence of their merciless and short-sighted policy is an inordinate increase of Field Mice, both long tails and short tails. Up to 1846-47 the Stock-dove was a rare bird in Danby, but now as many as six to ten pair breed annually. In 1846 there was a brood of nine black game on the Low Moor, including two old birds, but, although none are known to have been shot or killed, in a year or two they entirely disappeared from the neighbourhood.

Of the rarer British visitors Mr. Atkinson has twice seen the Great Grey Shrike. The rarest visitor to the parish recorded by him was a White's Thrush (*Turdus varius*), one Sunday afternoon on the grass under his study window for perhaps ten or fifteen minutes, and which was leisurely examined through a pair of excellent field glasses. Perhaps the strangest bird visitors to present themselves in the winter snows to be fed at the dining-room windows were a couple of Snipe, which came regularly two and sometimes three times a day, for eight or nine days continuously, to feed on bread soaked in milk.

All this and much more on the same subject about Corncrakes, Water-rails, and others, we may find in Mr. Atkinson's volume, and we can only regret that space will not permit us to give a more general and extended notice of a thoroughly delightful book.—J.C.

NOTES—LEPIDOPTERA.

Sphinx convolvuli at Barnsley.—On August 29th I had brought to me a specimen of *Sphinx convolvuli* found at rest on a wall near the centre of the town. As far as I am aware, this is the first appearance of *S. convolvuli* in this district since the memorable season of 1887, during which year 10 specimens were reported, most of them netted whilst hovering over petunias. —Wm. E. Brady, Barnsley, 31st August, 1891.

Larentia ruficinctata at Oughtershaw, Langstrothdale.—In the September number of the 'Naturalist' there is a note on the occurrence of *Larentia ruficinctata* near Scarborough, and the non-occurrence of its usual food-plant *Saxifraga granulata*. I may state that I have repeatedly taken *L. ruficinctata* at Oughtershaw, but have never noted *S. granulata* in this locality. No record of this plant for Wharfedale is given in the 'Flora of West Yorkshire,' but it is, I am told, very plentiful in the glebe meadow at Burnsall. With regard to Littondale, which runs along the south side of Langstrothdale, the Rev. W. A. Shuffrey has only found *Sax. granulata* in the church-yard and vicarage-grounds of Arncliffe; he observes that it grows in the neighbourhood of Malham Tarn—and for that locality *L. ruficinctata* has also been recorded. Indeed, according to the excursion-circular of the Yorkshire Naturalists' Union, Malham is the only West Yorkshire station recorded hitherto, a statement which requires modification.—T. B. Wood, St. Peter's, Eaton Square, London.

[See records of the occurrences of *L. ruficinctata* in Yorkshire, in 'List of Yorkshire Lepidoptera,' pp. 46 and 180; and as to the food-plant, see note in the present number, p. 312, by Mr. J. H. Rowntree, on *Saxifraga granulata* near Scarborough.—Ed. Nat.].

NOTE—ARCHÆOLOGY.

A Stone Celt from Castleshaw, Saddleworth.—The readers of 'The Naturalist' who take an interest in prehistoric implements will be interested to know that a very pretty, and almost perfect, stone celt was found in a bed of clay this morning at Castleshaw, Saddleworth. The clay cutting averages from 3 ft. 6 in. to 6 ft., and is 830 ft. above the level of the sea. I do not know how deep below the surface of the ground the celt reposed, as it was not found until the clay was being cut up and prepared for puddle. It would be interesting to know this as fixing its position *in situ*, and enable us to form an approximate idea of the rate of deposition of clay in depressions of land on the Pennine slopes, and the results of rain-wash.

The longer axis of my celt is $4\frac{1}{4}$ in. by $2\frac{1}{2}$ in. at the broader cutting edge. It is beautifully polished, and coated with a thin film of porcelainised matter, and speckled in several places with dendritic markings, which establish its genuine character and age. I am not sure of what kind of stone it is made, and reverence it too highly to chip off the smallest fragment which would disfigure it. A few wave-lines of a darker colour, and inclining at an angle of 10°, pass through the centre of the smaller axis and add slightly to its beauty, and probably attracted the eye of the primitive man who shaped it. The texture is fine-grained, and the rock may be greenstone.

Castleshaw valley has now yielded me two celts similar in character, but different in size. I have always regarded this valley as one of the most recently formed in Saddleworth, and I have no doubt primitive man lingered in its shady recesses long after he had retreated from the more rugged vales of the parish. I say 'shady recesses' advisedly, because I am sure, owing to its physical conformation, geological substrata, and shelter from the prevailing and destructive north-easterly winds blowing for weeks at the spring of the year, tree life in former time was not only more prolific, but more vigorous and healthy, and afforded shelter and protection to the early members of our race, who fashioned and used the implements to which I have referred.—Wm. Watts, F.G.S., June 11th, 1891.

NOTES AND NEWS.

The Rev. C. G. Green is publishing a series of papers on 'The Rarer Birds of the West,' in a magazine which by its interesting contents and general get-up does honour to Plymouth and Devon, viz., 'The Western Magazine and Portfolio,' which in appearance and style reminds one of the familiar 'English Illustrated.'

A pleasantly-written little book by the Rev. Bennett George Johns, M.A., Vicar of Woodmancote, Hants., lies before us. It is published in a handsome pictorial cloth cover by Isbister and Co., at 2s. 6d., and is entitled 'Among the Butterflies—a Book for Young Collectors.' Twelve woodcut plates depict the various species, and a table at the end indicates the names, habitats and dates, both of the butterflies and their caterpillars.

A bit of good botanical work has been done in Yorkshire by a distinguished south-country botanist, Rev. W. Moyle Rogers, F.L.S., who spent all August and half of September 1890, in collecting the Brambles and the Roses of the Yorkshire dales—about Helmsley and Northallerton, near Richmond and Settle, and along the length of Wensleydale. This forms the subject of a paper entitled 'Notes on some of the *Rubi* and *Rosæ* of the Yorkshire Dales,' which is published in the 'Journal of Botany' for August.

'An Historical Account of the Genus *Latirus* (Montfort) and its dependencies, with descriptions of eleven new species, and a catalogue of *Latirus* and *Peristernia*,' which has just been published in the memoirs of the Manchester Literary and Philosophical Society, is our indefatigable friend Mr. J. Cosmo Melvill's latest contribution to conchological literature. Eleven species are described and figured as new, bringing up the total numbers known to 62 of *Latirus*, and 49 of *Peristernia*, or 111 altogether.

NOTES—MAMMALIA.

Mammalia in Upper Swaledale.—I spent the week from the 15th to the 24th August in Upper Swaledale, staying at the Strands Farm, which is half-way between Gunnerside and Low Row, and availed myself of the opportunity to set half-a-dozen mouse-traps about the farm, with the view of ascertaining definitely what species of micro-mammals were to be found there, at an altitude of about 650 ft. above sea-level. The traps I used were of the 'Cyclone' pattern, which is certainly the most effective I have ever seen. It is an American patent, sold at fourpence, and entirely of metal, consisting of a flat bottom-plate, to which are attached a couple of powerful springs which act instantaneously, and mercifully kill the animal on the spot without damaging it for preservation. The bait I used was powdered aniseed, which small mammals seem not to be able to resist. The traps were shifted to different places two or three times a day, and by their means we secured the little animals by scores. The animal of which we secured the greatest quantity was the Common Shrew (*Sorex tetragonurus*). I had hoped to get the Lesser Shrew, but was unsuccessful. The next most numerous species was the Bank or Red Field Vole (*Arvicola glareolus*), of which we obtained a great many. Of the Long-tailed Field-Mouse (*Mus sylvaticus*) we obtained three or four, and one very young one was caught by the roadside and brought to me alive by some boys. Of the House Mouse (*Mus musculus*), one was caught when a trap was set close to the house, and one in a barn in the pasture. The Short-tailed Vole (*Arvicola agrestis*) was never caught by the traps, and it was only upon requisitioning the captures of a cat which was bringing up a family at the adjoining farm, that I obtained an example of this species, a very fine old male. Thus, the existence of these five species is established on satisfactory evidence, although the actual numbers caught by the traps must not be too rashly assumed to represent their true relative abundance in the district.—W. Denison Roebuck, Sunny Bank, Leeds, August 30th, 1891.

Long-tailed Field Mouse near Alford, Lincs.—On Feb. 13th, 1886, I received from Mr. J. E. Mason two *Mus sylvaticus*, the least-damaged of four squeezed to death by the weight of a plough which had cut into their winter-nest at Rigsby.—W. Denison Roebuck, Leeds.

Noctule Flying in Sunshine.—I, and no doubt many others, will remember the 13th inst. as one of the most glorious days of the year; I was out from early morning until late at night, and during the whole time I don't think I saw a single cloud. The sun was intensely hot, and on crossing the Wharfe near Pool, about half-past ten in the morning, I was very much surprised to see a large bat flying up and down the river in the brilliant sunshine. It frequently flew within a few yards of me, and I had no difficulty in recognising it as a Noctule (*Vesperugo noctula*). It was hawking for insects in company with Martins and Sand-Martins, and although not so swift as these birds, its flight was much more rapid than I had thought when seeing it fly at dusk.

The martins did not appear to understand their strange companion, and frequently darted towards it, but not, I should imagine, with any hostile intention; although at each manœuvre of the martins the Noctule executed a rapid change of direction, as though it did not regard the near approach of its feathered companions as indicative of friendship.

I frequently saw it drop a foot or two in the air, and on one occasion, when it took a large fly within twenty feet of me, it must have dropped quite a yard. Of this action Bell writes (British Quadrupeds, p. 23): 'It is occasioned by some large and intractable insect having been captured, and the anterior joint of the wing, with its well-armed thumb, is required to assist in retaining it until masticated.' My experience of this bat is that it usually flies very high, but the one here mentioned confined itself to within a few yards of the water, excepting when it rose for the purpose of crossing the bridge. Of course its action in this respect will be influenced by the position of its prey.

I have more than once seen the Noctule fly in early twilight, but never before in bright sunshine *before noon*. Unlike the Owls, it would appear as though the Noctule was as capable of using its eyes in the sunshine as any ordinary diurnal animal.—Edgar R. Waite, The Museum, Leeds, Sept. 21st, 1891.

PTEROPHORUS PALUDUM IN YORKSHIRE.

GEO. T. PORRITT, F.L.S.,

Huddersfield; President of the Entomological Section, Yorkshire Naturalists' Union; Author of 'A List of Yorkshire Lepidoptera,' etc.

It is with much satisfaction that I record the occurrence of so interesting a species as *Pterophorus paludum* in Yorkshire. When collecting on Thorne Waste, in company with Mr. John Harrison, of Barnsley, on July 18th last, I boxed a 'Plume' which both I and Mr. Harrison failed to recognise. On making a careful examination of it last week, I found it agreed very closely with Dorsetshire specimens of *P. paludum* in my cabinet; but as it was both a bigger specimen, and also in finer condition, than any in my series, together with my doubt as to the likelihood of *paludum* occurring so far north as Yorkshire, I at once sent it off to my friend Mr. Sydney Webb, of Dover, who is perhaps our best authority on the British 'Plumes,' for his opinion. His reply on returning the specimen was, as I had anticipated, '*Paludum*, a very fine and large specimen.' *Fterophorus paludum* has always been considered a very rare species in Britain, and for many years seemed to be confined to the Cambridgeshire fens, where it was taken very sparingly. For many years back, however, it seems to have disappeared even from there, and was apparently lost in Britain, until some six years ago the Rev. O. Pickard-Cambridge turned it up in Dorsetshire. In 1886 and 1887 a fair number were secured in the new locality, but since then it appears to have been very scarce again there, so that its advent right on the open part of Thorne Moor is most welcome. It is to be hoped, as is likely, that future investigation will prove it to be well established there.

9th Sept., 1891.

NOTES—BOTANY.

Saxifraga granulata near Scarborough.—On page 277 of the September 'Naturalist,' it is stated that *Saxifraga granulata* does not grow in the neighbourhood, whereas it occurs fairly commonly in several parts of the district round Scarborough, and actually within two or three miles of Hutton Buscel Moor.—J. H. ROWNTREE.

Wahlenbergia hederacea in Bowland, Mid-West Yorkshire.—A few weeks ago, when walking from Clitheroe to Lancaster, viâ Whitewell and Sykes, I was pleased to notice on the open fell-side, close to the high road, near Hareden, several hundred specimens of this beautiful plant. This locality is in the Ribble district of West Yorks., but is not recorded in Mr. Lees' 'Flora.' My friend, Mr. A. Wilson, of Bradford, had previously gathered it in the same locality.—JOHN B. FOGGITT, Southport, September 5th, 1891.

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Papers and Records published with respect to the Natural History and Physical Features of the North of England.

GEOLOGY AND PALÆONTOLOGY, 1890.

The present instalment has been compiled and edited by

ALFRED HARKER, M.A., F.G.S.

This list includes a few entries omitted in former years. The bibliography might be rendered more complete if editors of periodicals, secretaries of societies, and especially authors of papers in local journals, newspapers, etc., would send copies to the editor of this journal.

Reprints and authors' separate copies should bear the name of the publication, the number of the volume or part, the *original* paging, and the *date* of publication.

In the following list the titles only are given of papers published in 'The Naturalist.'

The counties and vice-counties of which we take cognizance in these references are the following, as named and numbered in the Watsonian scheme:—

53, Lincoln S.; 54, Lincoln N.; 56, Notts.; 57, Derby; 58, Cheshire; 59, Lancashire S.; 60, Lancashire W.; 61, York S.E.; 62, York N.E.; 63, York S.W.; 64, York Mid W.; 65, York N.W.; 66, Durham; 67, Northumberland S.; 68, Cheviotland; 69, Westmorland with Furness; 70, Cumberland; and 71, Isle of Man.

Previous instalments of the Bibliography of Geology and Palæontology have appeared as follows:—

For 1884—	'Naturalist,'	December	1885,	pp.	394-406.
„ 1885—	„	November	1886,	„	349-362.
„ 1886—	„	June	1888,	„	178-188.
„ 1887—	„	February	1889,	„	61-77.
„ 1888—	„	April	1890,	„	121-138.
„ 1889—	„	November	1890,	„	339-350.

H. COOPER ABBS. **York N.W., N.E.**

[Presidential] Address to . . . the Tyneside Naturalists' Field Club . . . May 24th, 1886 [describing the 'Buttertubs' between Wensleydale and Swaledale, as explained by Mr. Faraday Spence; a Shap Granite boulder at Saltburn-by-the-Sea; geology of Saltburn explained by W. Y. Veitch]. Nat. Hist. Trans. Northumb. Durh. & Newc., vol. 8, part 3, 1889, pp. 326-346.

S. A. A[DAMSON]. **York N.E.**

Scientific Aspects of Health Resorts.—IX.—Saltburn and District [geology described and illustrated by views at Saltburn, Marske, and Staithes, and cliff-sections]. Research, Jan. 1890, pp. 148-151 and woodcuts.

S. A. A[DAMSON]. **Yorkshire.**

Scientific Research in Yorkshire [being an account of the work and objects of the Yorkshire Boulder Committee, Fossil Flora Committee, Coast Erosion Committee, and Geological Photographs Committee]. Research, March 1890, pp. 200-202.

PERCY LEONARD ADDISON. **Cumberland.**

Description of the Cleator Iron Ore Company's Barytes and Umber Mine . . . in the Caldbeck Fells [vein situated half-mile west of High Pike, at Hare Stones; analyses of umber and barytes given]. Min. Proc. Inst. Civ. Eng., vol. cii. pp. 283-291.

ANON. [not signed]. **Westmorland.**

Field-Meeting of the Kendal Natural History Society [at Longsleddale, Aug. 2nd; giving very brief summary of the geological observations]. Westm. Note-Book and Nat. Hist. Record, vol. 1, part 3, Sep. 1888, p. 65.

ANON. [not signed]. **York N.W.**

Dove Cote Gill or Dowker Gill Cavern [described; the total length of this limestone cavern is roughly 350 ft.]. Kendal Mercury and Times, April 27th, 1888; rep. Westm. Note-Book, vol. 1, part 4, Dec. 1888, pp. 184-187.

ANON. [not signed]. **Isle of Man.**

[Appointment of a Committee to search for the remains of a gigantic Megaceros hibernicus, said to be buried in a marl bed on the estate of Ballalough, German]. Yn Lioar Manninagh, No. 2, April 1889, i. 36.

ANON. [not signed]. **York S.W.**

Donations, etc. [to Museum at Newcastle; *Sphenopteris artemisiacfolia* from Fawdon Old Colliery; and specimens of Fluid Bitumen and Middletonite, from Middleton, near Leeds]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 10, part 2 (1890), p. 293.

ANON. [not signed]. **Durham, Northb. S., York Mid W., N.W., S.W.**

List of . . Donations to the Museum [at Newcastle] . . . from Aug. 10th, 1888, to July 1st, 1889 [includes various fossils and rock-specimens from various localities]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 10, part 2 (1890), pp. 315-316.

ANON. [not signed]. **Yorkshire.**

Yorkshire Naturalists' Union—Geological Section [brief summary of the 1889 excursions]. Research, Feb. 1890, p. 188.

ANON. [not signed]. **Lanc. S.**

Several boulders of large size [found in cutting the Ship Canal opposite the Salford docks, described]. Research, April 1890, p. 230.

ANON. [not signed]. **Cheshire.**

[Discovery of Beds of Salt at Middlewich]. Research, April 1890, p. 231.

ANON. [not signed]. **Yorkshire.**

Our Portrait Gallery. XX.—The Late Mr. S. A. Adamson, F.G.S. [with a Meissenbach portrait, and memoir]. Research, April 1890, pp. 228-230.

ANON. [not signed]. **Lanc. S.**

Geological Sections on the Manchester Ship Canal: I. [with figures, after photographs by E. Ward, of drift sands and river gravels with pot-hole at Barton, and slickensided fault in Waterstones at Norton]. Research, April 1890, vol. ii, page 232.

ANON. [not signed]. **Cheshire.**

Coal in Cheshire [announcing the intention of the Salt Union to bore for coal beneath the salt-beds, and speculating on the prospects]. Research, April 1890, vol. ii. pp. 217-218.

ANON. [not signed]. **Derbyshire.**

The Railway Invasion of the High Peak [describing the district to be traversed by the Dore and Chinley Railway, with a description of the geological structure of Kinderscout, Edale, Castleton, and the neighbourhood]. Manchester Guardian, April 8th, 1890.

ANON. [not signed]. **Linc. N. and S.**

Murray's Handbook for Lincolnshire, with maps and plans [brief sketch of geology of county on pp. 5-7, with a note on the South Scarle boring].

ANON. [not signed]. **Isle of Man.**

The Geology of the Isle of Man [in five articles; No. I, with sketch-map, is introductory; II. deals with the Skiddaw Slates, which form most of the island; III. the Carboniferous rocks, including the basement beds, the limestones, and the volcanic accumulations; IV. the granite masses of Foxdale and Dhoon, with some observations on the glacial phenomena; and V. discusses more closely the conditions prevailing during Glacial times]. Manch. Examiner for Aug. 9th, 16th, 23rd, and 30th, and Sep. 6th, 1890.

ANON. [not signed]. **York S.W.**

Opening out of a new Coal Field in Yorkshire [report of a meeting at Balne, near Drax, to consider the prospects of working coal under the Magnesian Limestone of that district: decision to sink a shaft on Balne Moor; a bore-hole 120 yards deep at Carlton Towers had given satisfactory results]. Yorkshire Post and Eastern Morning News, Sept. 27th, 1890.

J. C. ANTROBUS and F. H. HATCH. **Cheshire.**

Preliminary Note on the Composition and Origin of Cheshire Boulders [recognising boulders of Muncaster granite, Buttermere granophyre, and volcanic rocks from the Borrowdale series, with gabbro and basalt, possibly from Western Scotland; besides quartzites, probably Carboniferous]. Yorkshire Post, Sep. 9th, 1890; Rep. Brit. Assoc. for 1890, p. 813 (1891).

J. R. ASHWORTH. **Lanc. S.**

Thermometric Observations of Air and Water at Cowm and Spring Mill Reservoirs [tabulated]. Trans. Rochdale Lit. and Sci. Soc., vol. 2, for 1889-90, publ. 1890, pp. 103-105 and double-page plate.

J. BACKHOUSE, Jun. **Durham.**

A Weardale Lead Mine [visited and described]. Nat. Hist. Journ., Feb. 15th, 1890, xiv. 1-4.

ROBERT R. BALDERSTON. **Westmorland and York N.W.**

The Cambrian Rocks and Silurian Base of Ewcross, Dufton, and Shap Wells [propounding an interpretation of the structure of the district founded on isoclinal folds in the supposed Cambrians]. 25 pp. and map. Lancaster (privately printed). [Reviewed in Nat., Feb. 1891, pp. 63, 64].

S. BARBER. **Cumberland.**

A Boulder's Tale [account of a fall of a hundred-ton boulder from Helvellyn into the Wythburn Valley]. Sci. Goss., July 1890, p. 166.

H. C. BEASLEY. **Lanc. S.**

Field Meeting at Burton Point [on July 20th, 1889; noticing section of Middle Bunter]. Proc. Liverp. Geol. Soc., vol. vi. p. 216.

ALFRED BELL. **Isle of Man.**

The "Manure" Gravels of Wexford [noting a Pliocene fauna with *Nassa reticosa*, etc., in the north of the Isle of Man]. Geol. Mag., Jan. 1890, dec. 3, vol. vii. pp. 35, 36.

THOMAS BELL. **York N.E.**

On the Middlesborough Salt Works, and the Recent Boring on the Lackenby Foreshore Estate [with details of boring to 1,806 ft.]. Trans. Manch. Geol. Soc., vol. xx., 1890, p. 560; discussion, pp. 560, 561.

T. G. BONNEY. **North-Western Counties.**

Mr. Mellard Reade's Interpretation of the Lower Trias Physiography [rejecting the marine theory of the origin of the Bunter beds of Cheshire and Lancashire, and maintaining the fluviatile theory of these strata, which are compared with the sub-Alpine drifts and the *nagelflue* and *molasse* of Switzerland; the materials are claimed to have been derived from Scotland]. Geol. Mag., Feb. 1890, dec. 3, vol. vii. pp. 52-55.

T. G. BONNEY. **North-Western Counties.**

Mr. Mellard Reade on the Physiography of the Lower Trias [a reply to that writer]. Geol. Mag., May 1890, dec. 3, vol. vii. pp. 235-237.

C. H. BOTHAMLEY. **York Mid W. and S.W.**

The Sulphur Waters of Yorkshire [the author divides them into two groups, one including the Harrogate waters, the other those of Askern; the former are deep-seated, and contain a large proportion of saline constituents, among others, barium up to as much as 10 grains per gallon; the Askern waters are of surface origin, and contain much organic matter; a paper read before Brit. Assoc.]. Leeds Mercury, Sep. 9th, 1890; Rep. Brit. Assoc. for 1890, p. 779 (1891).

WILLIAM BROCKBANK. **Lanc. S.**

The Levenshulme Limestones [limestones with *Modiola macadami* in the Upper Coal Measures, exposed in a railway-cutting between Fallowfield and Levenshulme]. Mem. and Proc. Manch. Lit. and Phil. Soc., (4), vol. iii. pp. 209-211.

G. W. BULMAN. **Northumberland.**

On a Coal-Seam in the Bernician Series of Northumberland, and its Bearing on the Theory of the Formation of Coal. Nat., Nov. 1890, pp. 321-322.

York S.E. and Linc. N.

H. W. BURROWS, C. DAVIES SHERBORN, and GEO. BAILEY.

The Foraminifera of the Red Chalk of Yorkshire, Norfolk, and Lincolnshire [describing and figuring many species, mostly from Speeton; others from South Cave, Great Girendale [? Givendale] and Whanam [? Wharram], Yorkshire, and Candlesby, Lincolnshire]. Journ. R. Microsc. Soc., Oct. 1890, pp. 549-566, plates viii.-xi.

W. LOWER CARTER, Sec. **York Mid W.**

Excursion to Garforth and Newthorpe [with account of the Magnesian Limestone, and an analysis by Mr. Fairley of that quarried at Garforth, containing 50·59 per cent. carbonate of lime and 39·75 per cent. carbonate of magnesia]. Trans. Leeds Geol. Assoc., part v. pp. 51-53, 1889.

W. LOWER CARTER, Sec. **York Mid W.**

Excursion to South Milford and Sherburn [with particulars about the Upper and Lower Magnesian Limestones]. Trans. Leeds Geol. Assoc., part v. pp. 54-56, 1889.

W. LOWER CARTER, Sec. **York S.E.**

Excursion to Brough and Elloughton [with observations on the gravels of Mill Hill and the Millepore Oolite of Brough and Ellerker]. Trans. Leeds Geol. Assoc., part v. pp. 56-59, 1889.

W. LOWER CARTER, Sec. **York Mid W.**

Excursion to Giggleswick and Langcliffe [the Carboniferous Limestone]. Trans. Leeds Geol. Assoc., part v. pp. 59-61, 1889.

W. LOWER CARTER, Sec. **York Mid W.**

Excursion to the "Haddockstones" and District [noting at Wormald Green the drift-capped Lower Magnesian Limestone (of which an analysis by Mr. Holme gives 71·125 per cent. carbonate of lime and 25·625 carbonate of magnesia), and at Haddockstones near Ripon the Millstone Grit]. Trans. Leeds Geol. Assoc., part v. pp. 62-65, 1889.

W. LOWER CARTER, Sec. **York S.W.**

Excursion to the Holme Valley [see Nat., 1889, pp. 204-206]. Trans. Leeds Geol. Assoc., part v. pp. 65-67, 1889.

W. LOWER CARTER, Sec. **York S.W.**

Excursion to Hebden Bridge and Crimsworth Dean [Kinderscout Grit and Upper Yoredale Shales]. Trans. Leeds Geol. Assoc., pt. v. pp. 67, 68, 1889.

W. LOWER CARTER, Sec. **York Mid W.**

Excursion to Ripley [etc., see Naturalist, 1889, pp. 69-70]. Trans. Leeds Geol. Assoc., part v. pp. 68-71, 1889.

W. LOWER CARTER, Sec. **York N.W., Durham.**

Excursion to Upper Teesdale [see Nat., 1889, pp. 285-290]. Trans. Leeds Geol. Assoc., part v. pp. 71-76, 1889.

W. LOWER CARTER, Sec. **York S.W.**

Excursion to Eccleshill [noticing quarries in the Elland Flagstones, with slickensided fault-surfaces, etc.]. Trans. Leeds Geol. Assoc., part v. pp. 76-77, 1889.

S. CHADWICK. **York S.E.**

The Yorkshire Naturalists' Union at Lowthorpe near Driffield [26th May, 1890, Geology, pp. 208-209]. Nat., July 1890, pp. 203-209.

W. CHEETHAM. **Durham, Cumberland, York N.W. and Mid W.**

A Geological Tour through Durham into Cumberland [noting geological features, and giving an account of the limestones quarried at Stanhope: abstr. of paper read before Leeds Geol. Assoc.]. Research, April 1890, vol. ii. pp. 238-239.

WM. CHEETHAM. **York Mid W.**

On a Boulder with Cup and Ring Markings at Horsforth [six miles N.W. of Leeds; a boulder of Millstone Grit, five feet long]. Proc. Yorks. Geol. and Polyt. Soc. (N.S.) vol. xi. pp. 175-177.

MISS COIGNOU. **York Mid W.**

On a new species of Cyphaspis from the Carboniferous Rocks of Yorkshire [from the Pendleside Limestone of Butterhaw near Cracoe, named *C. acanthina*; the genus hitherto not known above the Devonian]. Quart. Journ. Geol. Soc., vol. xlvi. pp. 421, 422, with woodcut.

E. MAULE COLE. **York S.E.**

Coast Erosion in Yorkshire [stating the annual rate of destruction at various points in Holderness: Hornsea 6 ft. 10 in., Aldborough 5 ft. 1½ in., Tunstall 6 ft. 9 in., Holmpton 4 ft. 5 in.]. Research, April 1890, vol. ii. pp. 225-226.

E. M. COLE. **Yorkshire.**

In Memoriam.—Samuel Arthur Adamson, F.G.S. Nat., April 1890, pp. 117-119.

E. MAULE COLE. **York S.E.**

Notes on the Driffield and Market Weighton Railway [describing cuttings in the Chalk, Lias, etc.]. Proc. Yorks. Geol. and Polyt. Soc. (N.S.), vol. xi. pp. 170-5.

E. MAULE COLE. **York N.E.**

On a Bed of Peat overlying a Lacustrine Deposit near Filey [first noticed by Phillips; the peat is 6 ft. thick; the formation of this and similar accumulations is explained by the existence of higher land to the east, now destroyed by the sea]. Yorks. Post, Leeds Mercury, and Times, Sep. 11th, 1890.

GEORGE CREWDSON. **Westmld., Furness, Cumbld., York N.W.**

Cambrian and Silurian Fossils from Westmorland, Cumberland, and North Lancashire, in the Kendal Museum [given in tabular form, with perpendicular columns for the different formations; 5 *incertæ sedis*, 1 tracks.

and markings, 1 Sponge, 40 Hydrozoa (Graptolithina), 22 Actinozoa, 12 Echinodermata, 3 Annelida, 34 Crustacea, 9 Mollusca (Polyzoa), 48 Brachiopoda, 28 Lamellibranchiata, 24 Gasteropoda, 8 Pteropoda, and 20 Cephalopoda, are enumerated in the table, with clear indication of locality and horizon]. Westm. Note-Book and Nat. Hist. Record, vol. i. part 2, June 1888, pp. 34-44.

GEORGE CREWDSON. **Cumberland, Westmorland, Furness.**

The Physical History of the Lake District [treated of from a broad and general point of view]. Westm. Note-Book and Nat. Hist. Record, vol. 1, part 6, June 1889, 134-144 (article unfinished, ends abruptly at foot of p. 144).

H. W. CROSSKEY [Sec.]. **York (all divisions), Durham, and Lanc. S.**

Seventeenth Report of the Committee consisting of . . . [nine names] . . . for the purpose of recording the position . . . [etc.] . . . of the Erratic Blocks of England, Wales, and Ireland . . . with particulars of many boulders in Yorkshire (see Naturalist); at Harton near North Shields; and at Newchurch-in-Rossendale]. Rep. Brit. Assoc. for 1889, pp. 115-127.

J. R. DAKYNS. **York N.W., Mid W., and S.W.**

On the Changes of the Lower Carboniferous Rocks in Yorkshire from South to North [the four-fold division of the Millstone Grit in Derbyshire does not hold northward; the Yoredale type of beds hardly exists south of Kettlewell; going north from Coverhead cherty beds, etc., come in between the Main Limestone and the Millstone Grit; and the ganister beds in the Millstone Grit become more pronounced as we go northward]. Yorkshire Post, Sep. 6th, 1890; Rep. Brit. Assoc. for 1890, pp. 811, 812 (1891).

York Mid W. and N.W.

J. R. DAKYNS, R. H. TIDDEMAN, W. GUNN, and A. STRAHAN.

The Geology of the Country around Ingleborough, with parts of Wensleydale and Wharfedale. Mem. Geol. Surv., England and Wales (Explanation of Quarter-sheet 97 S.W.; New Series, Sheet 50) [describing the Lower Palæozoics of Ingleton, Crummack, and Ribblesdale, the Carboniferous System, and the Glacial and Post-Glacial deposits: notes on the mica-trap dykes by F. Rutley]. 8vo, 103 pp., London.

J. W. DAVIS. **York S.W.**

On Cœlacanthus Phillipsii, Agassiz [a fish from the Lower Coal-Measures at Swan Bank Pit, Halifax; description of the single specimen known]. Geol. Mag., April 1890, dec. 3, vol. vii. pp. 159-161.

JAMES W. DAVIS. **York S.W., Northumberland S.**

On the Dentition of Pleuroplax (Pleurodus), A. S. Woodw. [with passing references to *P.* (*P.*) *affinis* Agass., occurring in a thin shale above the Better-Bed Coal of Clifton and Lowmoor, near Halifax; *P. rankinei* Ag., from the Northumberland Low Main Coal]. Ann. and Mag. N.H., Sixth Ser., No. 28, Ap. 1890, vol. 5, pp. 291-294 and pl. 13.

J. W. DAVIS. **York S.W. and Mid W.**

On Fossil Fish of the West Riding Coal-Field [an account of the various finds since 1833, more than 50 species being now recorded from the district; paper read before the Brit. Assoc.]. Yorkshire Post, Sept. 10th, 1890; Rep. Brit. Assoc. for 1890, pp. 822-823 (1891).

J. W. DAVIS. **York S.W.**

The Yorkshire Naturalists' Union at Bretton Park [14th June, 1890, Geology, pp. 226-227]. Nat., Aug. 1890, pp. 223-227.

CHARLES DAVISON. **Lanc. S.**

On the British Earthquakes of 1889 [including the one felt in Lancashire on Feb. 10th, which disturbed a nearly circular area 55 miles in diameter; epicentrum two miles N.N.E. of Bolton, depth of seismic focus about $3\frac{3}{4}$ miles; shock ascribed to a slipping of the Irwell fault]. Proc. Roy. Soc., vol. xlviii, pp. 275-277.

W. Boyd Dawkins. **York Mid W.**

[Caverns and Subterranean Streams round Ingleborough, mentioned in discussing a paper by Mark Stirrup]. Trans. Manch. Geol. Soc., vol. 20, part 16, 1890, p. 456.

C. E. De Rance. **Lanc. S. and Cheshire.**

Notes on the Geology of the Manchester Canal. Trans. and Proc. Chesterf. Mid. Count. Inst., vol. i. pp. 1 et seq.

C. E. De Rance [Sec.]. **Linc. S., Lanc. S., and Durham.**

Fifteenth Report of the Committee consisting of . . . [18 names] . . . for the purpose of investigating the Circulation of Underground Waters . . . [giving sections and other details of borings at Bourn, supplied by Mr. Jas. Pilbrow; several localities in Lancashire, by Mr. A. Timmins; and at Seaton Carew, by Mr. W. J. Bird]. Rep. Brit. Assoc. for 1889, pp. 71-89 [75-84].

T. H. Easterfield and J. Mitchell Wilson. **York Mid W., S.W., S.E.**

The River Aire—a study in River Pollution [giving a brief geological sketch of the Aire basin, and incidentally confirming the fact that the material of the 'warp' in the Yorkshire rivers is derived from marine erosion of the Holderness cliffs]. Leeds Mercury and Yorkshire Post, Sep. 9th, 1890.

D. Embleton. **Northumberland S.**

On a Spinal Column of Loxomma Allmani, Huxley [see next entry]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. viii. p. 349, 1889.

D. Embleton. **Northumberland S.**

On the Spinal Column of Loxomma Allmanni, Huxley, from the Northumberland Coal-field [a fine specimen of this species, which, when alive must have been about 14 ft. long]. Rep. 59th Meeting of Brit. Assoc., Newc.-on-Tyne, 1888 (pub. 1889), pp. 580-581.

J. J. Fitzpatrick. **Derbyshire.**

Recent Discovery of a Bone Cave at Deep Dale, near Buxton [by Mr. W. Millett; remains of *Bos longifrons*, wild boar, brown bear (*Ursus arctos*), red deer, reindeer, etc., and Roman relics]. Proc. Liverp. Geol. Soc., vol. vi. pp. 200-206.

Arthur H. Foord and G. C. Crick. **Linc. N. or S., York N.E.**

Descriptions of new and imperfectly-defined species of Jurassic Nautili contained in the British Museum (Natural History) [*Nautilus terebratus* Dum., Upper Lias, near Lincoln. and *N. calloviensis* Opp., Scarborough, Kelloway rock, described and figured (woodcuts)]. Ann. and Mag. Nat. Hist., Sixth Series, No. 28, Ap. 1890, vol. 5, pp. 270 and 290.

Arthur H. Foord and G. C. Crick. **York N.E.**

On some new and imperfectly-defined species of Jurassic, Cretaceous, and Tertiary Nautili contained in the British Museum (Natural History) [with adverse criticism, at p. 399, of a record for Malton of *Naut. radiatus* J. Sow.]. Ann. and Mag. Nat. Hist., Sixth Series, No. 29. May 1890, vol. 5, pp. 388-409.

M. Foster. **York S.E.**

Geology of South-East Yorkshire, with remarks on the Great Ice Age [a lecture on the local geology, in the form of an excursion from the Humber to Cliffe, Hotham, Kettlethorpe, Beverley, Hornsea, Hull, Hessle, Brough, South Cave, Sancton, and Market Weighton, giving a general description of the strata from the Trias to the Chalk, with the glacial drift and other superficial deposits]. 24 pp., 12mo., Market Weighton, no date [1889?].

Hilderic Friend. **Cumberland, Lanc. S.**

A Mud-capped Dyke [in Cumberland; geologically considered]. Sci. Goss., March 1890, pp. 57-59.

H. B. GEINITZ. **Lanc. S.**

On the Red and Variegated Marls of the Upper Dyas, near Manchester [recording, with critical remarks, twenty species of fossils; *Schizodus*, *Aucella*, gasteropods, etc.]. Trans. Manch. Geol. Soc., vol. 20, part 19, 1890, pp. 537-554; translated from Sitz. naturw. Ges. Isis, Dresden, 1889.

J. E. GEORGE. **Lanc. S.**

Microscopical Examination of two Glacial Boulders [by J. S. Hyland; one is a porphyritic felsite boulder at Mayer Library Walks, Bebington]. Proc. Liverp. Geol. Soc., vol. vi. pp. 197, 198.

JOHN CHARLES GILL. **Linc. S.**

Artesian Wells in South Lincolnshire [at Wilsthorpe, fourteen miles from Peterborough; details of boring and analysis of water (by Prof. Wanklyn)]. Proc. Inst. Civ. Eng., vol. ci. pp. 218-221.

J. G. GOODCHILD. **York N.W.**

An Outline of the Geological History of Upper Swaledale. Nat., Aug. 1890, pp. 243-247.

J. G. GOODCHILD. **Westmld., Cumbld., and York N.W.**

Notes on some Observed Rates of Weathering of Limestones [tombstones at Kirkby Stephen were found to have weathered at the rate of one inch in 500 years; a limestone 'macadam' at Tailbrig in 250 years; a Yoredale limestone near Penrith in 300 years; and limestone at Askrigg in 240 years]. Geol. Mag., Oct. 1890, dec. 3, vol. vii. pp. 463-466.

J. G. GOODCHILD. **Westmorland, etc.**

Notes on Faults (abstract) [referring to the Pennine fault and also to the bearings of faults in the North of England generally; these are as follows, from older to newer:—(i) N. 20° W., (ii) N.W., (iii) N.N.E., (iv) E. 20° N., (v) E.]. Trans. Edinb. Geol. Soc., vol. vi. pp. 71-74.

J. G. GOODCHILD. **Cumberland.**

Notes on some Irregular Forms of Stratification [describing in particular the appearances in the Skiddaw Slates of the Caldbeck Fells]. Trans. Edinb. Geol. Soc., vol. vi. pp.

A. H. GREEN. **Durham.**

A word or two about the so-called Concretionary Structures in the Magnesian Limestone of Durham [brief notice only]. Rep. Brit. Assoc. for 1889 (pub. 1890), p. 597.

W. S. GRESLEY. **Derbyshire.**

Evidence furnished by the Quaternary Glacial-Epoch Morainic Deposits of Pennsylvania, U.S.A., for a similar mode of formation of the Permian Breccias of Leicestershire and South Derbyshire [ascribing these breccias to glacial action: abstract only]. Quart. Journ. Geol. Soc., vol. xlvi., Proc. pp. 114-115.

C. D. HARDCASTLE. **York N.W.**

The Physical Features of Ingleton [noting the structure of the mountains and valleys, the swallowing of certain rivers, the caves of the district, the Craven and Pennine Faults, and the succession of the older rocks in the Twiss and Doe valleys]. Trans. Leeds Geol. Assoc., part v, pp. 16-26, 1889.

A. H[ARKER]. **Cheviotland.**

Fossil Foot-prints in the Carboniferous of Northumberland. Nat., Sept. 1889, p. 270.

ALFRED HARKER. **Cumberland.**

The Basement Carboniferous Conglomerate at Ullswater. Nat., July 1890, p. 202.

ALFRED HARKER. **Cumberland.**

Notes on North of England Rocks: II. [various igneous rocks]. Nat., Aug. 1890, pp. 237-242.

ALFRED HARKER. **York N.E. and S.E.**

Notes on North of England Rocks: III. [Oolitic limestones]. Nat., Oct. 1890, pp. 300-304.

F. H. HATCH. **York N.W.**

On some West Yorkshire Mica-trap Dykes [from the Sedbergh district; the rocks are minette; characters described]. Yorkshire Post and Leeds Mercury, Sept. 9th, 1890; Rep. Brit. Assoc. for 1890, pp. 813-4 (1891).

A. HAVILAND. **Isle of Man.**

The Necessity for collecting and arranging the ascertained facts relating to the Glaciation of the Isle of Man. Yn Lioar Manninagh, vol. i. pp. 57 et sequ., 1889.

A. HAVILAND. **Isle of Man.**

Aspects of Crags of the Manks Mountains in relation to the Glaciation of the Island. Yn Lioar Manninagh, vol. i. pp. 77 et sequ., 1889.

JOHN HAWELL. **York N.E.**

The Yorkshire Naturalists' Union at Kildale-in-Cleveland [12th July, 1890]. Nat., Sept. 1890, pp. 269-276 [Geology, 274-276. See also Leeds Mercury, July 17th, and Yorkshire Weekly Post, July 19th].

M. FORSTER HEDDLE. **Cumberland.**

On Dudgeonite, Hydroplumbite, Plumbonacrite, and Plattnerite [the first two doubtfully given for Cumberland, but more probably Leadhills]. Mineralog. Mag., No. 39, May 1889, vol. 8, pp. 200-203.

W. HEMINGWAY. **York S.W.**

Notes on the Mineralogy of Barnsley [describing the various forms of carbon, sulphur, sodium, ammonium, magnesium, zinc, lead, barium, aluminium, calcium, silicium, iron, etc., found in the district]. Trans. Barns. Nat. Soc., 1885-6, vol. 5, pp. 3-7.

J. C. B. HENDY. **Derbyshire and Notts.**

Notes on a 'Wash-out' found in the Pleasley and Teversall Collieries, Derbyshire and Notts, [supplementing former note, and giving detailed description with sections]. Quart. Journ. Geol. Soc., vol. xlvi. pp. 432-437.

WILLIAM HERDMAN. **Durham.**

On the probable age of the Yoredale Rocks of Weardale, their deposition and denudation, with notes on the Glacial Epoch in Weardale, and on the formations now in progress, etc. Durham Chronicle, Oct. 5th, 12th, 19th, 26th, Nov. 2nd, 9th, 16th, and 23rd; 1888.

W. C. HEY. **York N.E.**

Exposure of Lower Lias at Redcar. Naturalist, May 1890, p. 149.

G. J. HINDE. **York N.E.**

On a new Genus of Siliceous Sponges from the Lower Calcareous Grit of Yorkshire [showing the little kidney-shaped bodies from Scarborough, first noticed by Dr. Sorby to be the globate spicules of a new sponge, here named *Rhaxella perforata*]. Quart. Journ. Geol. Soc., vol. xlvi. pp. 54-61, and plate vi.; Abstract in Ann. and Mag. Nat. Hist., Sixth Series, No. 27, March 1890, vol. 5, p. 254.

BERNARD HOBSON. **Lanc. S.**

On Some Ophicalcite Erratics at Barton-upon-Irwell [blocks of contorted serpentinous limestone, probably from Iona]. Trans. Manch. Geol. Soc., vol. xxi. Part 3, 1890, pp. 84-90; discussion, pp. 90-94.

B. HOLGATE. **York Mid W. and S.W.**

The Carboniferous Strata of Leeds and its immediate Suburbs [the quarries opened for brick-making purposes afford a section of 300 feet thickness altogether, including four seams of coal, several fire-clays, and various shales, some black and oily; paper read before Brit. Assoc.]. Yorkshire Post and Leeds Mercury, September 5th, 1890, Rep. Brit. Assoc., for 1890, pp. 795, 796 (1891).

B. Holgate. **York Mid W. and S.W.**

Some Physical Properties of the Coals of the Leeds District [noting the differences in their appearance in various seams and their behaviour under different conditions of combustion; the dull-looking coals are largely composed of resinous spores; paper read before Brit. Assoc.]. Yorkshire Post, September 5th, 1890; Rep. Brit. Assoc. for 1890, pp. 796, 797 (1891).

G. H. Hollingworth. **Lanc. S.**

On a Tree Branch found in the Drift [at 40 yards, in Bredbury Collieries, with details of section]. Trans. Manch. Geol. Soc., vol. xx. Part 20, 1890, pp. 566, 567.

H. H. Howell. **Durham.**

Note on the Classification of the Red Rocks in South-East Durham; and on a possible Unconformity between the Trias and the Permian Limestone in the same District [upholding the view of the Geological Survey that the whole of the red rocks (containing the salt beds) between the Rhætics and the Permian Limestone are Upper Trias, as opposed to Professor Lebour's opinion that the salt-measures are in the Upper Permian]. Geol. Mag., Jan. 1890; dec. 3, vol. vii. pp. 8-13.

Richard Howse. **Northumberland, Durham, Cumberland, York S.W. and N.E.**

Contributions towards a Catalogue of the Flora of the Carboniferous System of Northumberland and Durham, Part 1. [a catalogue of the Hutton Collection in the Museum at Barras Bridge, Newcastle]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. x, pp. 19-151, and plates i-vi, 1888.

R. Howse. **Durham, York N.E. and S.W.**

Note on the South Durham Salt Borings, with remarks on the Fossils found in the Magnesian-Limestone Cores, and the Geological Position of the Salt [a comparison of the South Yorkshire beds; sections at Saltholme, near Ferrybridge, Knottingley, Askern, Brotherton, etc.]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 10, Part 2 (1890), pp. 220-226.

Richard Howse. **Durham, Northumb. S., Cheviotland.**

Catalogue of the Local Fossils in the Museum of the Natural History Society [at Newcastle-on-Tyne; with localities and references, and a few stratigraphical notes]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 10, part 2 (1890), pp. 227-288.

W. H. Hudleston. **York N.E., Furness, Lincolnshire, Lancashire, and Cumberland.**

On the Geological History of Iron Ores [noting their distribution, age, occurrence, and probable origin; especially the magnetic ore of Rosedale (figured), the Northamptonshire ores, the Cleveland ores, the Frodingham ironstone, and the hæmatite deposits of N. Lancashire and S.W. Cumberland]. Proc. Geol. Assoc., vol. xi. pp. 104-144, and plate ii., 1889.

W. H. Hudleston. **Lincolnshire and York N.E.**

A Monograph of the British Jurassic Gasteropoda, Part I. No. 4, pp. 193-224, plates xii.-xvi. [describing and figuring numerous species of *Nerinæa* (some new) from the Lincolnshire Limestone of Weldon, Great Ponton, etc., and some from the Dogger of Blue Wyke]. Palæontographical Society, vol. xliii. (for 1889, pub. 1890).

Edward Hull. **York S.W., Derbyshire, Notts., Lanc. S., Cheshire.**

On the Probable Average Depth at which Coal is now being worked in the British Isles [based upon facts afforded in the Coalfields of Lancashire and Cheshire, Yorkshire, Derbyshire, and Notts]. Trans. Manch. Geol. Soc., vol. 20, parts 14 and 15, 1890, pp. 417-425; discussion, part 17, pp. 464-474.

W. MAYNARD HUTCHINGS. **Northumberland.**

Notes on the Probable Origin of some Slates [describing the microscopic characters of a series of fire-clays, micaceous sandstones, etc., in the Coal Measures at Seaton; besides muscovite and biotite, with grains of quartz and felspar, the rocks contain zircon, garnet, rutile, anatase, epidote (secondary after biotite), and barium sulphate (in little tabular crystals), with a matrix of very minutely divided material]. Geol. Mag., June and July, 1890, dec. 3, vol. vii. p. 264-273, 316-322.

J. SHEARSON HYLAND. **Westmorland.**

On some spherulitic Rocks from Co. Down [with a passing reference to a perlitic felsite from Long Sleddale, Lake District]. Sci. Proc. R. Dublin Soc., vol. 6, part 8, May 1890, p. 431.

J. ISMAY. **York S.W.**

Some Account of the Parish of Mirfield (by Mr. Ismay) to a Friend in Cumberland, 1755 [referring to soils, building-stones, coal, springs, etc.]. Yorks. Notes and Queries, Parts 10-11, Jan. and April 1888; pp. 206-211.

J. M. JEFFCOTT. **Isle of Man.**

Address of the Retiring President [referring to primeval forests and mammalian remains]. Yn Lioar Manninagh, No. 2, April 1889, i. 56.

OSMUND W. JEFFS. **Cheshire.**

Field-Meeting at Storeton Quarries.—May 21st, 1887 [brief account of geology]. Liverp. Sci. Stud. Assoc., Ann. Rep. for 1887-88, p. 11.

OSMUND W. JEFFS. **Yorkshire.**

Provisional List of Geological Photographs, arranged according to Counties. . . List No. 1. Part 11.—Yorkshire [48 photographs enumerated]. Research, Jan. 1890, p. 158.

T. RUPERT JONES. **Westmorland and Northumberland.**

Sixth Report of the Committee, consisting of . . . . on the Fossil Phyllopoda of the Palæozoic Rocks [noting a *Ceratiocaris*, possibly *C. tyrannus*, from the Upper Coldwell Beds near Troutbeck, and *Anthropodontoides bailesii* from Northumberland]. Rep. Brit. Assoc. for 1888, pp. 173, 174 (1889).

T. RUPERT JONES and J. W. KIRKBY. **Lanc. S.**

On the Ostracoda found in the Shales of the Upper Coal-Measures at Slade Lane, near Manchester [describing and figuring six species of *Carbonia*]. Trans. Manch. Geol. Soc., vol. xxi. Part 3, 1890, pp. 137-142, and plate.

E. JONES. **York Mid W.**

The Exploration of Elbolton Cave [near Thorpe, nine miles north of Skipton; the upper layer has abundant neolithic remains; the lower no human remains, but Bears (*Ursus ferox*), Alpine Hares, Reindeer; work to be continued]. Leeds Mercury and Yorkshire Post, September 9th. See also report of excursion to Skipton, etc., Yorkshire Post, September 8th; Times, September 9th, 1890; Rep. Brit. Assoc. for 1890, pp. 817, 818 (1891).

E. JONES. **York Mid W.**

On the Further Exploration of a Cave at Elbolton, near Thorpe, in Craven [with notice of the various remains discovered in the cave]. Proc. Yorks. Geol. and Polyt. Soc., vol. xi, pp. 307-310.

A. J. JUKES-BROWNE. **North-Western Counties.**

The Physiography of the Lower Trias [criticising the arguments of both Mr. Mellard Reade and Prof. Bonney]. Geol. Mag., May 1890, dec. 3, vol. vii. pp. 220, 221.

P. F. KENDALL. **Lanc. S.**

Field Meeting at the Barton Section of the Ship Canal [account of excursion on May 25th, 1889, noticing Pebble Beds, Upper Mottled Sandstone, etc.; also erratics of Buttermere granophyre, Eskdale granite, Yewdale agglomerate, and Permian limestone]. Proc. Liverp. Geol. Soc., vol. vi. pp. 215-216.

PERCY F. KENDALL. **Isle of Man.**

Manks Minerals [Apatite and Tourmaline found at Foxdale, Sep. 1889; not included in Sir Warrington Smyth's list]. Yn Lioar Manninagh, No. 5, April 1890, p. 167.

P. F. KENDALL. **Isle of Man.**

[Exhibition of Nassa serrata and a Columbella near sulcata, from the sands and clays of Northern Isle of Man]. Yn Lioar Manninagh, No. 5, Jan.-Apr., 1890, p. 125.

P. M. C. KERMODE. **Isle of Man.**

Fossil Shells from the Boulder Clay and Sand, North Ramsey [29 species enumerated as found; of these eleven are of recent Manx forms; and seven are already recorded in Cumming's list of Pleistocene Shells, which is reprinted here and includes 38 species]. Yn Lioar Manninagh, No. 4, Oct. 1889, vol. i. pp. 96-98, 1889.

P. M. C. KERMODE. **Isle of Man.**

Flints from the Brooghs, North Ramsey [Isle of Man; enumerated and described]. Yn Lioar Manninagh, No. 5, Jan.-April 1890, pp. 131-133.

ROBERT KIDSTON. **York Mid W. and S.W.**

The Yorkshire Carboniferous Flora [First Report on behalf of the Yorkshire Fossil Flora Committee, with a table of the Yorkshire Coal-Measures, a Bibliography of the subject, and a Synopsis of 120 species, including terminology, with references to descriptions and figures, and records of localities and exact horizons where each species has been found]. Trans. Yorks. Nat. Union, Part 14; pp. 1-64 and index on wrapper.

R. LAING. **Derbyshire and Notts.**

On the Bone Caves of Cresswell, and Discovery of an Extinct Pleiocene Feline (*Felis brevirostris*) **new to Great Britain** [found with various other remains in the Dog Hole cave]. Rep. 59th meeting of Brit. Assoc., Newc-on-Tyne, 1889 (pub. 1890), pp. 582-584.

G. W. LAMPLUGH. **York S.E.**

On a New Locality for the Arctic Fauna of the "Basement" Boulder Clay in Yorkshire [describing the occurrence of a thin seam of sand with *Astarte compressa*, *A. borealis*, *Pecten islandicus*, *Cyprina islandica*, etc., in the Basement Clay at South Sea Landing, Flamborough; this is a transported fragment of an old sea-bottom, as is the case with the similar occurrences at Bridlington and Dimlington]. Geol. Mag., Feb. 1890, dec. 3, vol. vii. pp. 61-70, with two figs. [a paper read before Brit. Assoc. at Newcastle; abstract in Rep. for 1889, pp. 590, 591; also Newc. Daily Chron. for Sept. 18th, 1889].

G. W. LAMPLUGH. **York S.E.**

Note on a New Locality for the Arctic Shell-beds of the Basement Boulder Clay on the Yorkshire Coast [with list of 13 species of Mollusca found]. Rep. 59th meeting of Brit. Assoc., Newc.-on-Tyne, 1889 (pub. 1890), p. 590.

G. W. LAMPLUGH. **York S.E.**

On the Boulders and Glaciated Rock-surfaces of the Yorkshire Coast [discussing the percentages of boulders from various sources found at different localities, which throw light on the movements of the ice: also noting a glaciated surface of Coralline Oolite at Filey Brigg; paper read before Brit. Assoc.]. Yorkshire Post, Sept. 5th. 1890; Rep. Brit. Assoc. for 1890, pp. 797. 798 (1891).

G. W. LAMPLUGH. **York N.E. and S.E.**

East Yorkshire during the Glacial Period [a general summary; during the formation of the Basement Clay the British ice was borne back by that from Norway, which filled the northern part of the North Sea, faced the high cliffs near Speeton, over-rode the lower part of Flamborough Head, and filled the bay of Holderness; the Purple Clay, formed within the margin of the ice, was contemporaneous with the intermediate gravels of other parts of the district; the Upper Boulder Clay was formed when the North Sea ice had somewhat receded and the British ice advanced over the old moraine]. Leeds Mercury, Sept. 5th, 1890; Rep. Brit. Assoc. for 1890, pp. 798, 799 (1891).

G. W. LAMPLUGH. **York N.E.**

The Neocomian Clay at Knapton. Nat., Nov. 1890, pp. 336-338.

ROBERT LAW. **Derbyshire.**

On Bones of Pleistocene Animals found in a Broken-up Cave, in a Quarry, near Matlock, Derbyshire [recording *Rhinoceros tichorhinus*, cave-hyæna, bear, reindeer, fox, red deer, and bison, from Boden's Quarry]. Trans. Rochdale Lit. and Sci. Soc., vol. i. for 1878-88, pp. 15, 16; no date [? 1888].

W. M. LAWRENCE. **Lanc. S. or Cheshire.**

Some Nuts [probably of *Corylus avellana*, found partially petrified 35 feet below bed of Mersey]. Nat. Hist. Journ., Feb. 15th, 1890, xiv. 13.

E. LOVETT. **Cheviotland.**

The Geology and Marine Fauna of the Farne Islands [with notes by H. T. Mennell, pp. cxiv.-cxvi.]. Proc. Croydon Nat. Hist. Club, 1882-83, pp. cxi-cxiv, 1884.

GEORGE FOSBERY LYSTER. **Lanc. S. and Cheshire.**

Recent Dock Extensions at Liverpool . . . [etc.] . . . [with various notes of geological interest; paper followed by discussion]. Proc. Inst. Civ. Eng., vol. c. pp. 2-114.

IVISON MACADAM. **Derbyshire, Cheshire.**

Analyses of various Mineral Substances [including two samples of Elaterite from Derbyshire, and one of Fichtelite from Handforth, Cheshire]. Mineralog. Mag., No. 38, March 1889, vol. 8, pp. 135-137.

J. E. MARR. **York N.W.**

The Connexion betwixt Yorkshire and Scandinavia. Nat., May 1890, pp. 145-148.

F. MARSHALL. **Derbyshire.**

Penketh School Field Club [in Monsal, Miller's and Cressbrook Dales; *Terebratula hastata*, *Pentamerus knightii*, and *Orthis elegantula* recorded]. Nat. Hist. Journ., June 15th, 1890, xiv. 90.

J. A. MARTINDALE. **Westm. and Furness.**

Our District [=Westmorland and Furness, defined, described, divided into six river basin districts, and illustrated by excellent map; of each district a brief geological sketch given]. Westm. Note Book and Nat. Hist. Record, Part 1, March 1888, pp. 1-19 of N.H. Rec., with folding map.

—. MATHEWS. **Westmorland.**

A Guide Book to Appleby, in Westmorland, and its vicinity [with a few geological notes, pp. 70-72]. Appleby, no date [1890].

L. C. MIALL. **York Mid. W.**

Airedale: its Scenery, Historic Sites, Geology, and Natural History [pp. 1-42 of the Handbook for Leeds and Airedale, prepared for the use of the Brit. Assoc.; treats of Malham Tarn and Cove, the Skipton district, the Lower Coal-Measures in Airedale, the geology of the country north of Leeds, and the extinct quadrupeds of Airedale]. 8vo, Leeds, 1890.

T. CARTER MITCHELL. **York N.E. and N.W.**

On the Drift Deposits of the Vale of Mowbray [enumerating the various rocks met with as boulders; sandstones, various limestones, Shap and other granites]. Proc. Yorks. Geol. Soc. (N.S.) vol. xi. pp. 177-182.

WM. MORRISON. **Derbyshire.**

Elaterite: a Mineral-Tar in Old Red Sandstone, Ross-shire [compared with same mineral found in the Carboniferous Limestone of Derbyshire]. Mineralog. Mag., No. 38, March 1889, vol. 8, pp. 133-134.

G. H. MORTON. **Lanc. S. and Cheshire.**

Notes on the Bunter and Keuper Formations in the Country around Liverpool [with details of thickness of the beds, description of the microscopic structure of the various sandstones, an account of the included pebbles (with notes by Professor Bonney), and considerations on the manner of deposition of the rocks]. Geol. Mag., Nov. 1890, dec. 3, vol. vii. pp. 497-505; Rep. Brit. Assoc. for 1890, pp. 819-820 (1891).

[C. T.] MUSSON. **Nottinghamshire.**

Sub-fossil Shell-Deposits in Nottinghamshire. Journ. of Conchology, vol. iv. No. 6, 1884.

H. OLIPHANT NICHOLSON. **Cumberland.**

Note on the Occurrence of Trigonograptus ensiformis, Hall, sp., and of a Variety of Didymograptus V-fractus, Salter, in the Skiddaw Slates [the former in the Upper Skiddaws (Ellergill Beds) at Mosedale Beck near Troutbeck; the latter, named var. *volucer*, from the Skiddaw Slates of Outerside near Keswick]. Geol. Mag., Aug. 1890, dec. 3, vol. vii. pp. 340-344, with four woodcuts.

S. SYDNEY PLATT. **Lancashire, Durham, Cumberland.**

Notes on the Paving Stones used at Rochdale [noticing the Carboniferous grits of the district, the Whin Sill, the Threlkeld quartz-porphyry, etc.] Trans. Rochdale Lit. and Sci. Soc., vol. ii, for 1889-90, pp. 4-21, and plate.

J. POSTLETHWAITE. **Cumberland.**

The Borrowdale Plumbago, its Mode of Occurrence and probable Origin [brief abstract of paper, speculating on an origin of the Borrowdale graphite or plumbago similar to that which has been suggested for the Kimberley diamonds]. Quart. Journ. Geol. Soc., vol. xlvi. Proc., pp. 124-125.

T. MELLARD READE. **Lanc. S., Cheshire.**

Cause of the Coloration of Red Sandstones. Nat., Jan. 1890, pp. 1, 2.

T. MELLARD READE. **North-western Counties.**

Physiography of the Lower Trias [second paper, in answer to Prof. Bonney's theory of a fluviatile origin of the Bunter and the derivation of the pebbles from Scotland]. Geol. Mag., April 1890, dec. 3, vol. vii. pp. 155-157 [also third paper], ibid, June, pp. 260-263.

T. MELLARD READE. **Lanc. S.**

Note on a Boulder met with in driving a Sewer Heading in Addison Street, Liverpool [a boulder 4 ft. 10 in. long, of 'much altered volcanic tuff,' with its long axis pointing N. 32° W., which is the local direction of glaciation]. Proc. Liverp. Geol. Soc., vol. vi. pp. 188, 189.

T. MELLARD READE. **Lanc. S.**

Note on some Mammalian Bones found in the Blue Clay below the Peat-and-Forest Bed at the Alt Mouth [determined by Mr. T. J. Moore as red deer and horse]. Proc. Liverp. Geol. Soc., vol. vi. pp. 213, 214.

J. F. ROBINSON. **Durham.**

Limestone [a paper read at a meeting of the Vale of Derwent Naturalists' Field Club, Nov. 10th, 1888]. Consett Guardian, May 10th, 1889.

J. F. ROBINSON. **Northumberland S. and Durham.**

On the Geology of the lower part of the Derwent Valley. Consett Guardian, August 16th, 1889.

J. F. ROBINSON. **Durham.**

On Coal. Consett Guardian, Nov. 15th, 1889.

J. F. ROBINSON. **Northumberland S. and Durham.**

The Geological Aspect of the Derwent Valley. Consett Chronicle, March 1st, 1890.

T. O. ROBSON. **Northumberland.**

Notes on some variations in the Faulting of Coal, observed in the . . . Redheugh Colliery. Trans. N. Eng. Inst. Min. and Mech. Eng., vol. xxxviii. p. 49.

CHARLES ROEDER. **Lanc. S.**

Some Newly-Discovered Species in the Upper Permian Deposits of Manchester [see Geinitz]. Trans. Manch. Geol. Soc., vol. xx. part 19, 1890, pp. 535-537 et sequ.

CHARLES ROEDER. **Lanc. S.**

Notes on the Upper Permians, etc., at Fallowfield, lately laid open: Part I. [full details of sections, with two plates]. Trans. Manch. Geol. Soc., vol. xx. part 21, 1890, pp. 615-627 and 2 plates; discussion, pp. 627-630.

CHARLES ROEDER. **Lanc. S.**

Description of Fossils found in the Permian Upper Series, at Fallowfield [named by Prof. Geinitz; see other entries]. Trans. Manch. Geol. Soc., vol. xxi. part 1, 1890, pp. 13-16; discussion pp. 16-19.

CHARLES ROEDER. **Lanc. S.**

Notes on the Permians and Superficial Deposits at Fallowfield [Part 2; local details, especially noticing the contortions in the Upper Permians at this locality]. Trans. Manch. Geol. Soc., vol. xxi. Part 3, 1890, pp. 104-113.

CHARLES ROEDER. **Lanc. S.**

Notes on the Upper Coal-Measures at Slade Lane, Burnage [full details with measured sections and fossil lists: folding plate with section by T. Sington]. Trans. Manch. Geol. Soc., vol. xxi. Part 3, 1890, pp. 114-135 and litho. section; discussion, pp. 135, 136.

A. W. RÜCKER. **Linc., York W., and Westmorland.**

Underground Mountains (third paper) [tracing the distribution of terrestrial magnetism in the British Isles; the author shows that certain districts attract the north pole of the magnet, and these coincide with districts where either large masses of basaltic rocks occur, or crystalline rocks probably approach near the surface; one such district runs through the Lincolnshire and Yorkshire Wolds to Settle and Appleby, and includes a line along which the Jurassic strata suddenly thin out, suggesting that crystalline rocks there approach the surface rather closely]. Good Words, March 1890, pp. 191-196; see also Rep. Brit. Assoc. for 1889, pp. 586, 587.

A. W. RÜCKER and T. E. THORPE. **Yorkshire and Lincolnshire.**

Preliminary Note on Supplementary Magnetic Surveys of Special Districts in the British Isles [a tract 150 miles long in Yorkshire and Lincolnshire marks a ridge-line or locus of attraction; it ranges from the Wash by Brigg, Howden, and Market Weighton, through the centre of the limestone district, and perhaps into the Lake district; the greatest vertical-force disturbances being at Market Weighton and Harrogate]. Abstract in Nature, April 24th, 1890, vol. xli. p. 598.

R. RUSSELL. **York S.W.**

On the Geology of the Southern Portion of the Yorkshire Coalfield [general sections with local details and with especial reference to the districts of Sheffield and Barnsley]. Proc. Fed. Inst. Min. Eng., vol. i. pp. 101-121.

JAMES SHIPMAN. **Nottinghamshire.**

The Geology of Nottingham: where and how to see it. 37th Ann. Rep. Nott. Nat. Soc. for 1889.

J. SHIPMAN. **Nottinghamshire.**

The Geology of Nottingham [being abstract of paper read to Nottingham Naturalists' Society, Dec. 10th]. Research, Jan. 1890, p. 167.

R. H. SOLLY. **Cumberland.**

Pseudomorphs of Hæmatite after Iron Pyrites [from Ardbarrow Mine, Millom, Cumberland, etc.]. Mineralog. Mag., No. 39, May 1889, vol. 8, pp. 183-185.

H. SPEIGHT. **York Mid W.**

Discovery of a Bone-Cave at Skirethorns near Grassington-in-Craven. Naturalist, July 1890, p. 202.

WILLIAM SPIERS. **Derbyshire.**

Some remarkable fossils: II. Trilobites [noting *Phillipsia* and *Griffithsides* near Castleton]. Wesley Nat., April 1888, pp. 33-36.

WILLIAM SPIERS. **York N.E.**

Some remarkable fossils: III. Corals [noting *Thamnastræa* and *Isastræa* in quarries near Scarborough]. Wesley Nat., April 1889, p. 37.

THOMAS STENHOUSE. **Lanc. S.**

A Curious Coal-Pit Water. Trans. Rochdale Lit. and Sci. Soc., vol. 2, for 1889-90, publ. 1890, pp. 22-24.

MARK STIRRUP. **Lanc. S.**

Alleged Recent Discovery of a Fossil Forest in Scotland [with references to Lancashire ones]. Trans. Manch. Geol. Soc., vol. 20, parts 14 and 15, 1890, pp. 412-416.

M. STIRRUP. **Cheshire.**

Large Boulder near Ringway [one 11½ ft. long found near Ringway: a volcanic rock, probably from the Lake District]. Trans. Manch. Geol. Soc., vol xxi. part 3, 1890, pp. 83, 84.

MARK STIRRUP. **Lanc. S.**

Notes on the Carboniferous Insects found at the Commentry Mines (Allier), France [and brief notes as to such as are known in the Lancashire Coal-field]. Trans. Manch. Geol. Soc., vol. 21, part 3, 1890, pp. 93-103.

T. TATE. **York S.W.**

Yorkshire Petrology, Part II: The Lamprophyres [describing and figuring the rocks of a number of dykes near Dent and Helmsgill]. Proc. Yorks. Geol. and Polyt. Soc. (N.S.), vol. xi. pp. 311-316, plates xiv, xv.

T. TATE. **York Mid W.**

On the so-called Ingleton Granite [quarried opposite Dale Barn, Ingleton; the rock is a quartzose volcanic tuff, the fragments being mostly of quartzite, with crystals of quartz and felspar and pieces of rhyolite and andesite, in an ashy matrix; paper read before Brit. Assoc.]. Yorkshire Post, Sept. 5th, 1890; Rep. Brit. Assoc. for 1890, pp. 800, 801 (1891).

T. TATE. **York Mid W.**

Note on Phillips's Dyke, Ingleton [in the Coniston Limestone series, 300 yards above Catleap waterfall, Storrs: the rock is a minette; characters described; paper read before Brit. Assoc.]. Yorkshire Post, Sept. 9th, 1890; Rep. Brit. Assoc. for 1890, p. 814 (1891).

F. S. TELLET. **Isle of Man.**

[**Discovery of Nassa serratula,** Brocchi, in the Manx boulder formation, in the brooghs north of Ramsey]. Yn Lioar Manninagh, No. 2, April 1889, i. 32-

WILLIAM THOMSON. **Lanc. S.**

On Leaves found in the cutting for the Manchester Ship-canal, 21 feet under the surface, and on the Green Colouring-matter contained therein [aspen, oak, willow, hawthorn, etc., found near Irlam, with a plate giving section across the Partington coal-basin]. Mem. and Proc. Manch. Lit. and Phil. Soc., series 4, vol. ii. pp. 216-219, 1889.

SILVANUS P. THOMPSON. **York Mid W.**

The Sources of the River Aire [describing an attempt to decide whether the Malham Cove stream is fed subterraneously from Malham Tarn; no decisive results obtained; paper read before Brit. Assoc.]. Yorkshire Post and Leeds Mercury, September 10th, 1890; Rep. Brit. Assoc. for 1890, pp. 821, 822 (1891).

R. H. TIDDEMAN. **York Mid W.**

On Concurrent Faulting and Deposit in Carboniferous Times in Craven, Yorkshire, with a Note on Carboniferous Reefs [to explain the discrepancy between the succession to the north and to the south of the Craven faults by the theory that the faults were formed during the deposition of the rocks]. Rep. Brit. Assoc. for 1889, pp. 600-603.

R. H. TIDDEMAN. **York Mid W.**

Carboniferous Rocks in the Upper Aire Valley and their Physical History [pp. 43-54 of the Handbook for Leeds and Airedale, prepared for the use of the Brit. Assoc.; the author deals chiefly with the two very different types developed to the north and the south of the Craven faults, these faults being supposed to have been in process of formation while the rocks were being deposited]. 8vo, Leeds, 1890. [For the 'knoll-reefs' see also report of excursion to Skipton, etc., Leeds Mercury, Sept. 8th, 1890].

[JAMES] TONGE. **Lancashire.**

Notes on Coal Measure Fossils [and the present condition of collections]. Trans. Manch. Geol. Soc., vol. xx. Part 20, 1890, pp. 564-566.

H. G. TOWNSEND. **Derbyshire.**

Mountain Limestone of Derbyshire [abstract of paper to Wakefield Nat. Soc.]. Research, June 1890, p. 284.

J. STANLEY TUTE. **York Mid W.**

Notes on some singular Cavities in the Magnesian Limestone [near Wormald Green Station; perhaps annelid borings]. Proc. Yorks. Geol. and Polyt. Soc. (N.S.), vol. xi, pp. 182-184, plate vi.

W. A. E. USSHER. **Linc. N. and York S.E.**

The Geology of parts of North Lincolnshire and South Yorkshire (Explanation of Sheet 86) Mem. Geol. Surv. England and Wales [treats of the Trias and Rhætic, the Lower Lias (with the Frodingham ironstone), Middle and Upper Lias, Lower Oolites (with the hydraulic limestone of Kirton, etc.), Middle and Upper Oolites, the Cretaceous (the Upper division of which unconformably overlaps the Lower or Neocomian), and the Superficial Deposits; lists of fossils and details of borings are given]. 8vo, viii + 231 pp., London, 1890.

G. ROBT. VINE. **York N.W., Furness, Derbyshire.**

A Monograph of Yorkshire Carboniferous and Permian Polyzoa, Part II. [describing species from Hurst and Richmond, Holker Park, Castleton, etc.]. Proc. Yorks. Geol. and Polyt. Soc. (N.S.), vol. xi. pp. 184-200, plate vii.

R. WALKDEN. **Lanc. S.**

"Stigmaria ficoides" found in a Mine at Over Darwen, Lancashire [a specimen 16 ft. long found at Cranberry Lane Colliery]. Trans. Manch. Geol. Soc., vol. xx. Part 17, 1890, pp. 461, 462, and plate.

WILLIAM WATTS. **York S.W.**

Thermometrical observations of Atmospheric Air and Water at Piethorn and Denshaw [a series of figures and detailed observations from June 1889 to May 1890]. Trans. Manch. Geol. Soc., vol. 20, part 21, 1890, pp. 580-607.

WILLIAM WATTS. **Lanc. S.**

Nitrogen Gas in Strinesdale Tunnel [outburst of gas from fissures in a white rock; analysis gave (by volume) 92 parts nitrogen and eight oxygen, with a trace of carbon dioxide]. Trans. Manch. Geol. Soc., vol. xx, Part 21, 1890, pp. 608-609, and discussion, pp. 609-613.

Cheshire, Lanc. S., Northumb. S., Durham, York S.E., Linc. N. and S.

WILLIAM HENRY WHEELER.

Bars at the Mouths of Tidal Estuaries [discussing their nature and the causes of their formation, with reference to the Mersey, Tyne, Tees, Ribble, Humber, and Wash; paper followed by discussion]. Proc. Inst. Civ. Eng., vol. c. pp. 117-216, and pl. v.

JOSEPH W. WILLIAMS. **North of England generally.**

British Fossils, and where to seek them [one of the 'Young Collector' series, giving elementary information on the subject]. 8vo, cloth, 96 pages, with woodcuts and a plate.

WILLIAM CRAWFORD WILLIAMSON. **Lanc. S.**

On the Organisation of the Fossil Plants of the Coal-Measures, Part XIV. [describing the newly-discovered fruit of *Calamites* from Oldham]. Phil. Trans. Roy. Soc., vol. clxxix. B, pp. 47-57, pl. viii.-xi., 1888.

WILLIAM CRAWFORD WILLIAMSON. **York S.W. and Lanc. S.**

On the Organisation of the Fossil Plants of the Coal-Measures, Part XV. [describing new species: *Rachiopteris hirsuta* and *Rhizomium verticillatum* from Halifax, and *Rhiz. reticulatum* from Oldham]. Phil. Trans. Roy. Soc., vol. clxxx. B, pp. 155-168, pl. i.-iv., 1889.

WILLIAM CRAWFORD WILLIAMSON. **York S.W. and Lanc. S.**

On the Organisation of the Fossil Plants of the Coal-Measures, Part XVI. [describing new species: *Lepidodendron mundum*, *L. intermedium*, and *L. spenceri* from Halifax, and *L. parvulum* from Oldham and Moorside; also *Rachiopteris irregularis* from Halifax]. Phil. Trans. Roy. Soc., vol. clxxx. B, pp. 195-214, pl. v.-viii.

W. C. WILLIAMSON. **Lanc. S. and York S.W.**

Report of the Committee, consisting of Professor W. C. Williamson (Chairman) and Mr. W. Cash (Secretary), appointed to investigate the Flora of the Carboniferous Rocks of Lancashire and West Yorkshire [consists of a memorandum on the present state of Prof. Williamson's inquiry into the Microscopic Features of the Coal of the world, and into the Organisation of the Fossil plants of the Coal Measures; with a reference to the identity of *Lyginodendron oldhamium* and *Rachiopteris aspera*]. Rep. 59th Meeting of Brit. Ass., Newcastle-on-Tyne, 1889 (publ. 1890), pp. 69-70.

E. WILSON. **Durham and York N.E.**

On the Durham Salt-district [the author refers the saliferous beds of the Tees district to the upper part of the Trias (Waterstones); he discusses the probable area and distribution of the beds; Abstr. Proc. Geol. Soc., June 7th]. Quart. Journ. Geol. Soc., vol. xliv. pp. 761-782, with map and folding table of sections. Also Research for December, vol. i. pp. 92-93 and 108-109 [an abridged account of the same subject].

A. SMITH WOODWARD. **York N.E.**

On the Palæontology of Sturgeons [*Gyrosteus mirabilis* from the Upper Lias of Whitby described and figured: see following entry]. Proc. Geol. Assoc., vol. xi. Nos. 1 and 2, pp. 24-44, with pl. i. and 13 wood-cuts.

A. SMITH WOODWARD. **York N.E.**

The Fossil Sturgeon of the Whitby Lias. Naturalist, April 1890, pp. 101-107, with eight woodcuts.

A. SMITH WOODWARD and C. D. SHERBORN. **Northern Counties, etc.**

A Catalogue of British Fossil Vertebrata [including synonymy, references to original descriptions and to type-specimens preserved in museums]; xxxv. + 396 pp. 8vo, London, 1890.

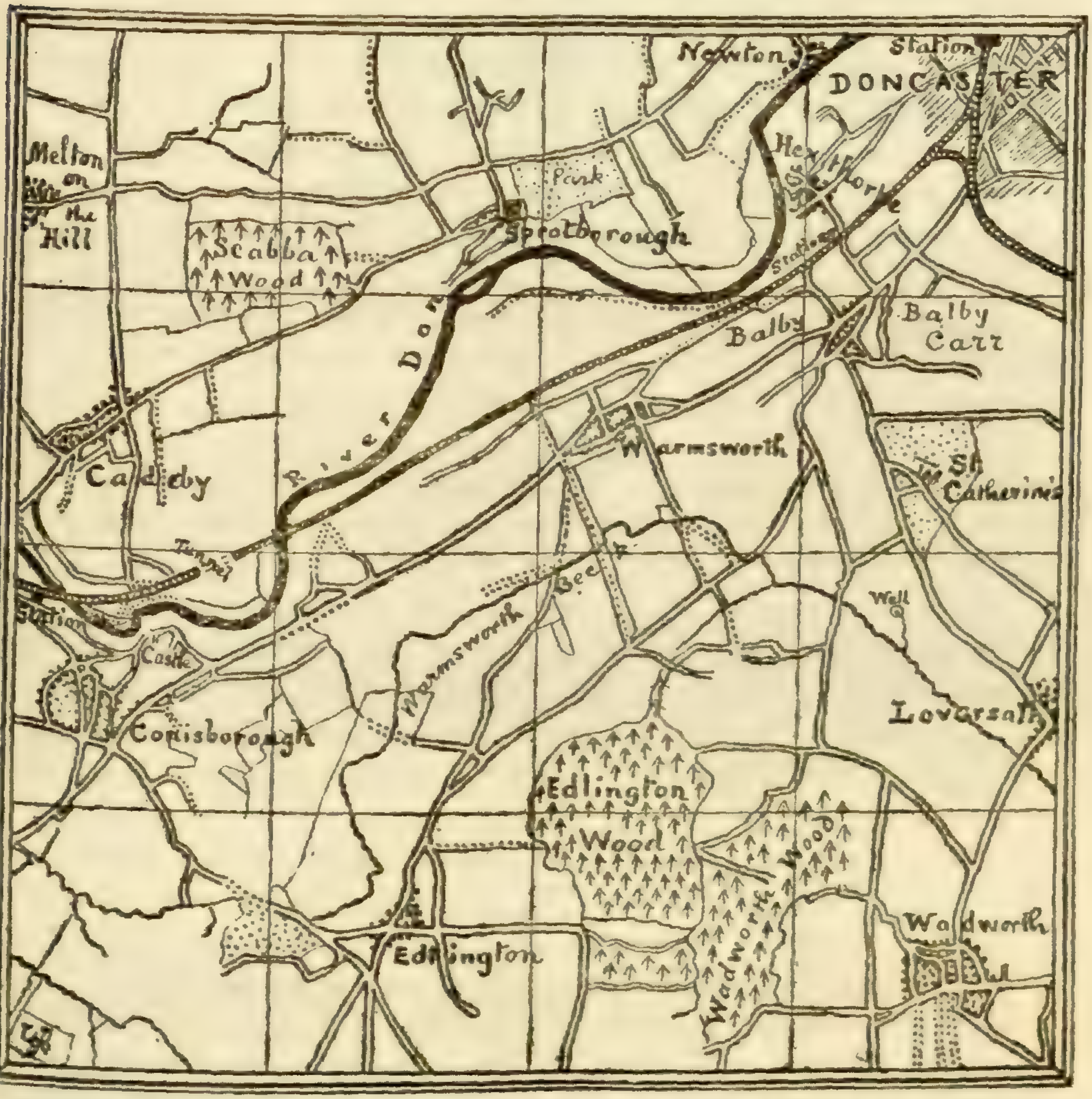
R. ZSIGMONDY. **Northumberland.**

Fortschritte in der Thonindustrie [giving analyses of fireclays from Coatbridge and Newcastle]. Dingler's Polyt. Journ., 1890, (6) xxvii. pp. 33-43.

THE YORKSHIRE NATURALISTS' UNION IN EDLINGTON AND WADWORTH WOODS.

On Wednesday and Thursday, the 16th and 17th of September last, the members of the Yorkshire Naturalists' Union mustered in the neighbourhood of Doncaster for the purpose of conducting the last excursion of the year.

The first day was set apart as a Fungus Foray, and a full report of the proceedings will be found on pages 339-348.



Explanation.—The Map is divided into square miles. No attempt is made to show the paths in the woods.

The second day was organised as one of the ordinary meetings of the Union, and was attended by about sixty members and their friends, including most of the botanists who had been on the ground the previous day. As on that occasion, the head-quarters were fixed at Doncaster, whence the woods at Edlington and Wadworth were to be investigated.

Permission for the exploration of their properties had been kindly granted by Earl Fitzwilliam, Lady Copley, Mr. F. J. Savile Foljambe, and the Denaby Main Colliery Co. Limited.

Three routes were arranged for the investigation of the district. The main body left Doncaster Station on the arrival of the 10.40 a.m., train, and, under the guidance of the following local members, namely, Messrs. H. H. Corbett, A. E. Hall, F.E.S., W. Roberts, and G. Winter, proceeded to Edlington Wood, and then away into Wadworth Wood.

The second route was organised for the benefit of members geologically inclined. They left Doncaster by the 11.33 train for Mexborough, and on arriving were met by the Resident Engineer (Mr. H. W. Chambers), who arranged for them to descend the deep pit at Denaby Main. On reaching the surface the party moved off to inspect a new shaft at Cadeby, and eventually returned to Doncaster.

A third party, to which the botanists attached themselves, chiefly indulged in fungus collecting, as on the previous day, those specially interested in this subject visiting Sandal Beat Wood.

All parties centred on the Glyn Hotel at five o'clock, where tea was served. An hour later the sectional meetings were held, and were succeeded by the general meeting, under the chairmanship of the Rev. Wm. Fowler, M.A., Vicar of Liversedge, an Ex-President.

After the reading and confirmation of the minutes of the Sledmere meeting, the following persons were unanimously elected members of the Union, viz.: Mrs. Vaughan, Doncaster; and Messrs. T. C. Heslington, Ripon, and Joseph Harrison, Staveley (Derbyshire).

Representatives from the following eighteen affiliated Societies responded to the roll-call, viz.: Heckmondwike, Barnsley, Wakefield, Ovenden, Liversedge, Bradford, Leeds, York, Sheffield, Dewsbury, Hull, and Harrogate Naturalists' Societies; Goole and Halifax Scientific Societies; Doncaster Microscopical Society; The Conchological Society; and Leeds and Hull Geological Societies.

On the motion of Mr. E. Howarth, F.R.A.S., of Sheffield, seconded by Mr. J. M. Kirk, of Doncaster, a vote of thanks was passed to the landowners who had granted permission for the Union to investigate their property; also to the various persons who had led parties or contributed to the excursion-programme.

The reports of the various Sections were next presented.

For the Vertebrate Zoology Section, Mr. Edgar R. Waite, F.L.S., presented the report, the following account being supplied by Mr. Riley Fortune, F.Z.S., one of the Hon. Secretaries of the Section, who attended the meeting, but had to leave early. He

writes:—This Section was very poorly attended, Mr. Thos. Bunker being the only representative on Wednesday, and Messrs. Waite and Fortune on Thursday. The district investigated did not yield very good results. Five species of Mammals, 29 of Birds, and four Amphibians were the only vertebrates recognised during the two days of the excursion. The small number of birds seen may easily be accounted for by the fact that most of the summer visitors had left our shores for warmer climes, and that the resident birds would most of them be moulting, and would consequently remain very quiet and unobtrusive. The absence of water in the part of the district visited accounts for the fact that no fish were seen.

Mr. Bunker, who was present at the Wednesday's excursion and accompanied the mycologists, states that he saw or heard very few birds. There were Swallows and Martins along the road; Magpies were common; and he was told that a Woodpecker had been heard, but the species was not known. He saw no game; and the only reptiles found were two toads. On Thursday, Mr. Waite visited Wadworth Wood, and fell in with a party of about a dozen Jays and a small flock of Long-tailed Tits. There were also a few Coal Tits and Great Tits searching about the wood. Linnets and Redpolls were fairly common, but on the whole birds were scarce, and of no great interest. After leaving the wood he called on the woodman (Mr. Clayton), who had two or three Dormice alive, which he had himself taken in Wadworth Wood. An old disused quarry was next visited, and yielded both the Crested and Smooth Newts, which were found under stones among the damp herbage; there was no visible water in the quarry. Wadworth Wood also supplied the Carrion Crow, Squirrel, and Weasel. The following is a complete list of the Vertebrates recorded:—

Mammals.

Mole. Dormouse. Weasel. Squirrel. Rabbit.

Birds.

Song Thrush.	Martin.	Magpie.
Blackbird.	Sand Martin.	Jackdaw.
Redbreast.	Greenfinch.	Crow.
Hedge Accentor.	Sparrow.	Rook.
Long-tailed Tit.	Chaffinch.	Skylark.
Great Tit.	Linnet.	Woodpecker (sp?)
Coal Tit.	Lesser Redpoll.	Ring Dove.
Wren.	Yellow Bunting.	Pheasant.
Meadow Pipit.	Starling.	Partridge.
Swallow.	Jay.	

Amphibians.

Great-Crested Newt Smooth Newt. Frog. Toad.

For the Conchological Section, in the absence of all its officers, Mr. W. Denison Roebuck, F.L.S., Leeds, reported that he and Mr. Riley Fortune, F.Z.S., Harrogate, were the only conchological collectors present, and that very little had been done. He had himself collected only in the vicinity and on the outskirts of Edlington and Wadworth Woods, where he had found *Helix hispida* in abundance, *H. rotundata*, *H. aspersa*, *H. nemoralis*, *H. cantiana*, *Zua lubrica*, *Clausilia rugosa*, *Pupa umbilicata*, *Vitrina pellucida*, *Zonites cellarius*, *Z. alliarius*, *Z. nitidulus*, *Z. fulvus*, *Z. purus* var. *margaritacea*, and *Z. crystallinus* ; and of slugs, *Arion ater*, *A. hortensis*, *A. bourguignati*, *A. minimus*, and *Limax agrestis*. Mr. Fortune, collecting near Edlington village, added a couple of freshwater species to the list, *Limnæa peregra* and *Anodonta cygnea*. The whole list of mollusca for the day thus amounted to 22 species, of which only a couple were fluviatile ones, and five were slugs, the remainder land-shells.

For the Entomological Section, the report was given by one of its Secretaries, Mr. A. E. Hall, F.E.S., who stated that the Section was well represented, the following members being present: Messrs. E. G. Bayford (Doncaster), W. E. Brady (Barnsley), H. H. Corbett (Doncaster), G. C. Dennis (York), R. Dutton (York), A. E. Hall (Sheffield), —. Hawkins (York), W. Hewett (York), George Jackson (York), William Mansbridge (Horsforth), G. T. Porritt, F.L.S., F.E.S. (Huddersfield, President), and W. White (Sheffield). He was sorry that the captures to report were so few, for, although the members worked hard, the results were not very satisfactory.

Coleoptera were collected by Mr. E. G. Bayford, who has furnished the following list. There were a few species taken he has yet to determine, which, should they prove anything worth reporting, will be duly recorded in 'The Naturalist.' *Cychrus rostratus*, *Loricera pilicornis*, *Pterostichus striola*, *P. madidus*, *P. nigrita*, *Coccinella septem-punctata*, *C.* 10-*punctata*, *Halyzia* 14-*guttata*, *Sinodendron cylindricum*, *Aphodius fœtens*, *A. fossor*, *Chrysomela hyperici*, *Crepidodera ferruginea*, *C. aurata* (new to the district), and *Apteropeda orbiculata*.

Of Lepidoptera, the imagines noted were *Vanessa io*, *Ennomos angularia*, *Cidaria immanata*, *C. russata*, *Anchocelis litura*, *Xanthia silago*, *Euperia fulvago*, *Polia chi*, *Plusia gamma* (common), *Gonoptera libatrix*, *Peronea comparana*, *P. variegana*, and *Ephippiphora bimaculana ;* and Larvæ of *Epione advenaria*, *Selenia illustraria*, *Odontopera bidentata*, *Amphydasis betularia*, *Abraxas ulmata* (exceedingly abundant), *Lomaspilis marginata*, *Eupithecia trisignaria* (taken by Mr. Jackson), *E. lariciata* (common on larch in

Wadworth Wood), *E. albipunctata*, *Flatypteryx falcula*, *Halias prasinana*, *Lithocolletis spinolella*, *L. nicelli*, *Cemiostoma scitella*, and *Nepticula tityrella*. Of Trichoptera *Stenophylax concentricus*, and of Orthoptera *Meconema varia*, were taken.

It is an unusual pleasure on an excursion to record the capture of spiders, but on this occasion Mr. E. Howarth, F.R.A.S., states that Mr. Thos. Dobb and himself collected what spiders were to be found, but owing to the misfortune that they had only one bottle in which to put their specimens there was a large mortality amongst them, and many of them were past recognition. He has identified and preserved the following species:—*Lycosa saccata*, *Clubiona accentuata*, *Thomisus cristatus*, *Linyphia triangularis*, *L. pratensis*, *Epeira scalaris*, *E. lutea*, and *E. inclinata*.

Mr. J. A. Erskine Stuart, one of the Hon. Secretaries of the Botanical Section, and its only officer present, writes:—The results of this excursion, as far as regarded Phanerogamic Botany, were much above the average for September excursions, owing to the season being quite three weeks later than usual. In Edlington Wood *Aquilegia vulgaris*, *Rhamnus frangula*, *R. catharticus*, *Lysimachia nummularia*, *Viola reichenbachiana* and *Erythrea centaurium* were gathered. Very little seemed to be about, so Mr. Waterfall and himself made for Levet Hagg, on the Don, and traced the river up to Conisborough Castle. In a quarry (limestone) at Warmsworth they gathered *Inula conyza*, *Erigeron acre*, *Verbascum thapsus*, *Daucus carota*, *Viola hirta*, and *Centaurea scabiosa*. By the river-side *Saponaria officinalis*, *Cerastium aquaticum*, *Sagittaria sagittifolia*, and *Potomageton pectinatus*. By the Warmsworth Crags they secured *Gentiana amarella*, *Daphne laureola*, *Hypericum montanum*, and *Reseda luteola*. In the grounds of Conisborough Castle *Helleborus viridis* was in abundance, while on the Castle walls *Parietaria officinalis* was plentiful. Besides these, *Rubus saxatilis* was found on the roadside near Warmsworth, and *Anthyllis vulneraria*, *Galium mollugo*, and *Solidago virgaurea* were collected. Many of the plants were in fruit, but altogether the time was well employed, and they had to run to catch the train at Conisborough. Salt's collection in the Sheffield Public Museum contains 1,300 species, having been considerably added to since his death in 1815. His list of plants for the neighbourhood of Sheffield contains nearly all the finds of Sept. 17th, 1891, although many of the dates affixed go back as far as 1786, and even to 1773.

In the absence of all the officers of the Geological Section, Mr. T. H. Easterfield was called upon to give a report of the work done. He writes:—On the way to Conisborough a good section of

the Upper and Lower Magnesian Limestone and the Middle Marl was passed through and examined in the railway cutting at Warmsworth. This is probably one of the finest existing sections of the Yorkshire Permian Rocks.

On arriving at Mexborough the party, eighteen in number, proceeded to the Denaby Main Colliery, where they were received with great kindness by Mr. Chambers, who deputed Mr. Witty, one of his staff, to take them down the shaft. Amongst other objects of interest in the colliery, a wall was pointed out which separates the working part of the colliery from a portion which has been on fire for some twelve years. The new apparatus for washing coal was shown and explained to the party; though somewhat complicated in detail, the apparatus is fairly simple in principle, and appears to do its work satisfactorily.

After leaving Denaby, the geologists walked to Conisborough Station. On the way the effect of a strike fault in altering the outcrop of the Permian Rocks was pointed out. Close to Conisborough Station a section of Carboniferous Rocks capped by drift was examined.

A visit was afterwards paid to the new shaft now being sunk at Cadeby. A section of the rocks already passed through was explained; it is stated that at this point there is a boulder clay containing well-scratched boulders of Glacial origin and having a depth of 60 yards. This is of interest owing to the comparative scarcity of glacial deposits in the Doncaster district. In a quarry at the back of the colliery, there is a good section of the Lower Magnesian Limestone showing a small natural cave and some evidence of dislocation. Photographs of this section were taken by Mr. M. H. Stiles. The limestone contained numerous small specimens of *Axinus* (*Schyzodus*) *obscurus* whilst numerous ferns, calamites, etc. (genera and species not determined), were found in the Carboniferous Shale. Before the party returned to Doncaster, thanks were formally tendered to Messrs. Chambers and Witty.

The Chairman then announced that as the Annual Meeting of 1892 would be the 101st meeting of the Union, the presidency for the ensuing year had been offered to and accepted by Mr. Charles P. Hobkirk. F.L.S., an old member and now the Chairman of the Executive Council.

A vote of thanks to the Rev. W. Fowler, M.A., for presiding—passed on the motion of Mr. W. White, of the Ruskin Museum, Sheffield, seconded by Mr. M. H. Stiles, of Doncaster—concluded he meeting.—E.R.W.

FISHES CAPTURED OFF WHITBY;

Sept.-Oct. 1891.

THOMAS STEPHENSON,

Whitby.

Galeus canis. Common Tope. Sept. 9th. Caught off and brought into Whitby by John Waters, fisherman.

The Common Tope (here called the 'Tom Ear,' and further North the 'Sweet William') is not so frequently caught off here as formerly. The Picked Dog-fish (*Acanthias vulgaris*), likewise, is not now nearly so abundant as in years gone by, when they were so numerous as to do considerable damage to the herring caught in the nets, by biting lumps out of them—hence the term 'bitten herrings.' They also caused great injury to the fishermen's nets. I remember, when young, going into Whitby Roads; we generally got one or more dog-fish on our lines during a day's fishing; now I never hear of such a thing.

Clupea finta. Twaite Shad. Sept. 9th. Brought by H. Freeman, fisherman.

The Allis Shad (*Clupea alosa*), better known here as the 'Horse Mackerel,' and the Twaite Shad (*Cl. finta*), locally known as the 'Rock Herring,' were both fairly common off this coast, but appear to have considerably decreased, as they are now seldom brought into this port. This season I have seen but two of the latter, and heard of but one of the former being brought here.

Lamna cornubica. Porbeagle or **Beaumaris Shark.**

Sep. 24th. About 6 feet long; caught in the herring-nets.

Sept. 30th. Another Porbeagle caught off and brought into Whitby by the crew of the Peterhead fishing boat 'Good News,' No. 490, P.D.

Oct. 13th. 8 feet long; brought into Whitby in fishing-boat B.F. 25.

I did not see the Porbeagle that was brought into this port on the 24th September, although it was exhibited in some parts of the town. The one on the 30th September I saw on the deck of the fishing boat 'Good News,' No. 490, P.D., and appeared to be little short of 6 feet in length, but I had not an opportunity to measure it. Both these were caught in the herring-nets in which they had got entangled, or rather rolled up, and to which, of course, they did much injury.

Belone vulgaris. Garfish. Oct. 2nd. Captured and brought into Whitby by —. Waller, fisherman.

Lampris luna. Opah or **King-fish.**

Not having observed in 'The Naturalist' any record of the capture at Bridlington of the Opah or King Fish (*Lampris luna*) in 1889, I send copy of a cutting from the 'Whitby Times' of the 2nd August, 1889: 'A beautiful specimen of the Opah or King Fish was caught at Bridlington on Tuesday, having got into shallow water. The measurement from the head to the tip of the tail is 3 ft. 4 in., and 20½ in. in depth. The upper part of the back and sides are of a rich green, reflecting both purple and gold in different lights, passing into yellowish-green below. Above and beneath the lateral line are various round yellowish-white spots, and all the fins are bright vermilion. Yarrell's "History of British Fishes" states that the fish is extremely rare; and at the date of the first edition of "British Zoology" only about five examples were recorded as having been taken—four of them in the north of the British Isles, and the other at Brixham in 1824. Towards the end of 1838, a fine specimen was caught on that part of the Dogger Bank nearest Bridlington, and passed into the hands of Mr. Boker, of York. The fish is common to the West Coast of Africa, and also the Eastern Seas.'

NOTE—BOTANY.

Volvox.—Mr. Hick, in his interesting paper on Klein's observations on *Volvox* in 'The Naturalist' for March 1890, states that the *Volvox stellatus* of Ehrenberg is the female colony of *V. globator*; agreeing here with Dr. M. C. Cooke, who, however, in his 'British Freshwater Algæ' calls *Sphærosira volvox* the male colony of *V. globator*, whereas Mr. Hick states that this form is the male colony of another species (*V. aureus*). In the Journal of the Royal Microscopical Society for April 1891 a brief summary of Klein's further researches appears, in which the following passage occurs:—'Dr. Klein states that the colonies of *V. globator* are exclusively non-sexual and monœcious (almost invariably proterogynous).' If this is so, what is the *V. stellatus* form? Perhaps Mr. Hick or some one having access to Klein's original articles can explain; a full résumé of his further researches would no doubt be of interest to the many readers of 'The Naturalist' who take an interest in *Volvox*.—C. L. LORD, **Goole, Oct. 1891.**

NOTES—LEPIDOPTERA.

Sphinx convolvuli at Ripon.—On Sept. 25th I had brought to me a fine specimen of *S. convolvuli*, found at rest in a garden in the centre of the town. As far as I am aware, this is only the fourth appearance of *S. convolvuli* in this neighbourhood.—C. CHAPMAN, Museum, Park Street, Ripon, Oct. 13th, 1891.

Late appearance of Abraxas ulmata.—On Saturday, Sept. 26th, whilst beating the full-fed larvæ of this species near Kiveton Park, I was surprised to take a fine female imago at rest on the herbage just beneath the tree I was beating. She is now depositing ova in the box where she is confined.—A. E. HALL, Sheffield, Sept. 28th, 1891.

FUNGUS FORAY AT DONCASTER.

HENRY T. SOPPITT,
Bradford.

THE Fungus Foray held in connection with the Doncaster excursion, on September 16th and 17th, was in every sense a success. It was the third foray of the Y.N.U.—the first taking place at Harrogate and Ripon in 1881, the second at Bramham and Harewood in 1888—and although the number of species collected was less than at the preceding ones, yet the interest and the enthusiasm exhibited were undoubtedly as great, and probably an outcome of the foray will be a welcome and much-needed accession to students of Yorkshire mycology. As yet fungi have not received a fair share of attention from Yorkshire botanists, but it is evident there is a growing desire to know more about these plants, and if fungus forays were held more frequently in Yorkshire no doubt a useful purpose would be served. There is no reason why a Yorkshire fungus foray should not be an annual event like that of the Essex Field Club and other Societies. One important feature of our Yorkshire fungus forays is the fact that they are the means of bringing students of mycology together, and it was a pleasure, at Doncaster, to see so many familiar faces—Mr. George Massee, F.R.M.S., of Kew, to whom the Union has been so much indebted in this respect; Prof. Plowright, M.D., of King's Lynn, who took an active part in the Union's first fungus foray; Mr. Thomas Birks, of Liverpool; Mr. W. N. Cheesman, of Selby; Mr. Charles Crossland, of Halifax; Rev. W. Fowler, M.A., of Liversedge; Mr. J. W. Sutcliffe, of Halifax; Mr. H. G. Ward, of London; and others—all apparently interested.

The headquarters of the Union during the two days was the Glyn Hotel, and shortly after 11 o'clock on Wednesday morning a conveyance was in waiting to take the party—about a score in all—to Edlington and Wadworth Woods, under the competent local guidance of Messrs. H. H. Corbett, J. M. Kirk, and M. H. Stiles, all of Doncaster.

After some delay, a start was made, and the party were conveyed at a merry pace to the hunting-ground, some three miles distant. On arrival, operations commenced in good earnest, but it was soon found that fungi were conspicuous by their absence. Almost in vain were specimens sought for, the only objects that could be found being *Armillaria melleus*, *Coprinus micaceus*, and one or two other very common species. A stretch of pasture, contrary to expectation, was a failure, but at the upper end several fallen logs were examined and beneath one of them Mr. Crossland found *Merulius aureus*, which

proved to be one of the 'finds' of the day, it being even doubtful whether it has been met with in Britain before. Then an example was picked up of the rare *Coprinus lagopus*, with its woolly stem. At first Edlington Wood was a disappointment owing to its having recently been thinned in some parts and to dense undergrowth of hazel and bramble in others, nevertheless a number of interesting fungi found their way into the baskets, including *Hygrophorus cossus*, which was abundant, *Psalliota hæmorrhoidarius*, not uncommon under the magnificent yew-trees, and several interesting species of *Lactarius*.

After a half-hour's halt at 'the Cottage' for refreshments, another portion of Edlington Wood was explored with satisfactory results. Here *Leptonia euchrous*, *Hygrophorus chrysodon*, and *Russula aurata*, three truly handsome species, were met with, in addition to many others. Time passed merrily along as the baskets were being filled, and in due course the party were conveyed back to Doncaster, and dined together at the Glyn Hotel.

A feature of the dinner was that fungi were served. Only two species, however, were dealt with, viz., *Coprinus comatus* and *Hygrophorus eburneus*, neither of which gave satisfaction, the flavour being completely ruined by 'Bovril' or some such compound.

After dinner an adjournment was made to a room adjoining the hotel, which was set apart for the 'show,' and where the task of unpacking and arranging the specimens was commenced. But so far as determining species was concerned, little could be satisfactorily done by candle-light; and beyond removing the fungi from the baskets—a goodly number of which were worthless through the carelessness of the youths who acted as 'carriers'—little else was done. Here would have been an excellent opportunity for a mycological lecture, or the reading of short papers, had such been arranged, but unfortunately this had not been thought about, and it was left for the mycologists to spend the evening as they thought best, which they did.

However, early next morning the work of examining the fungi was resumed, and by nine o'clock the bulk of the species were labelled. In addition to the fungi collected at Edlington and Wadworth woods, a large number of species had been brought from the neighbourhood of Halifax by Messrs. Crossland, Lister, and Sutcliffe. Mr. A. Clarke, of Huddersfield, had sent a nice lot of *Lepiota friesii* var. *acutesquamosus* from near Huddersfield; Mr. Massee had found a batch of the rare *Lycoperdon hoylei* flourishing in Doncaster; Mr. Percy H. Grimshaw forwarded specimens of *Lepiota cepæstipes* from a nursery at Ilkley; Mr. H. G. Ward laid on the table an example of *Volvaria parvulus* from Lynn;

several specimens from Bolton Woods and Esholt were brought for identification; and a box received from Mr. William Hodgson, of Malton, contained an old and large specimen of *Polyporus squamosus*. Mr. Massee contributed largely to the interest of the show by some remarkably interesting sections of mycelium from abroad, and a number of beautiful illustrations of rare British fungi.

Although no excursion had been specially arranged for the mycologists on the Thursday, from enquiries it was learned that the woods at Sandal Beat might prove interesting. After a conveyance had been sought, a party of nine undertook to explore these woods, which were quite of another character from those investigated the previous day.

At first fungi were tolerably abundant and in variety. There were *Collybia platyphyllus*, with its long, creeping mycelium; *Sphaceloma hydropiperis*, a smut attacking the ovaries of *Polygonum hydropiper*; *Lactarius subumbonatus*, a species that might easily be passed for a pale form of *L. rufus*; and numerous examples of a yellow *Russula* with a granulose stem and pileus, which was thought by some to be *Russula granulata* Cke., while others said it was only immature *R. ochroleuca* Fr., and that the granules would disappear as the plant matured. But this *Russula* is one of the commonest in Yorkshire, and apparently can be called anything. Mr. H. G. Ward was fortunate in detecting a smut attacking the ovaries of *Holcus mollis*? which ultimately proved to be *Tilletia rauwenhofii*, a species hitherto unknown in Britain.

Shortly after one the party returned to Doncaster, well pleased with the morning's foray, and most of the afternoon was spent at the 'show.' Later in the day several species were brought in from Edlington Wood, etc., the most interesting being *Nyctalis asterophora*, by Mr. W. White, of Sheffield.

The following is a list of the species collected or shown—186 species in all, of which 29 species and one variety are new to the West Yorkshire list.

HYMENOMYCETES.

AGARICINEÆ.

Agaricus (Amanita) phalloides Fr. Edlington Wood. Plantation, Ovenden (G. L. Lister).

Agaricus (Amanita) muscarius L. Bolton Woods (H. T. Soppitt).

Agaricus (Amanita) rubescens P. Sandal Beat.

Agaricus (Amanita) mappa Batsch. Sandal Beat.

Agaricus (Amanitopsis) vaginatus Bull. Edlington Wood.
Agaricus (Lepiota) rachodes Vitt. Edlington Wood.
***Agaricus (Lepiota) friesii** Lasch var. **acutesquamosus.** Near Huddersfield (Mr. A. Clarke).
Agaricus (Lepiota) cristatus L. Edlington Wood.
Agaricus (Lepiota) granulosus Batsch. Edlington Wood. Sandal Beat. Ovenden (G. L. Lister).
***Agaricus (Lepiota) cepæstipes** Sow. Ilkley (Mr. P. H. Grimshaw).
Agaricus (Armillaria) melleus Fl. Dan. Edlington Wood.
Agaricus (Tricholoma) rutilans Schæff. Mixed wood, Hebden Bridge (James Needham, of Woodend).
Agaricus (Tricholoma) portentosus Fr. Mixed wood, Hebden Bridge (James Needham).
Agaricus (Tricholoma) nudus Bull. Edlington Wood.
Agaricus (Clitocybe) nebularis Batsch. Edlington Wood.
Agaricus (Clitocybe) clavipes Pers. Sandal Beat.
Agaricus (Clitocybe) phyllophilus Fr. Sandal Beat.
Agaricus (Clitocybe) infundibuliformis Schæff. Edlington Wood.
Agaricus (Clitocybe) metachrous Fr. Sandal Beat.
Agaricus (Laccaria) laccatus Scop. Edlington Wood. Sandal Beat.
Agaricus (Collybia) radicatus Relh. Edlington Wood.
Agaricus (Collybia) platyphyllus Fr. Sandal Beat.
Agaricus (Collybia) maculatus A. & S. Edlington Wood.
Agaricus (Collybia) velutipes Curt. Halifax (C. Crossland and J. W. Sutcliffe).
Agaricus (Collybia) butyraceus Bull. Edlington Wood.
Agaricus (Collybia) confluens Pers. Sandal Beat.
Agaricus (Collybia) dryophilus Bull. Edlington Wood.
Agaricus (Collybia) tuberosus Bull. Edlington Wood.
Agaricus (Collybia) cirrhatus Schum. Edlington Wood.
***Agaricus (Collybia) muscigenus** Schum. Halifax (C. Crossland and J. W. Sutcliffe).
Agaricus (Mycena) rugosus Fr. Edlington Wood.
Agaricus (Mycena) galericulatus Scop. Edlington Wood.
Agaricus (Mycena) galopus Pers. Edlington Wood.
Agaricus (Mycena) polygrammus Bull. Edlington Wood.
Agaricus (Mycena) stylobates Pers. Edlington Wood.

Agaricus (Mycena) lacteus Pers. Edlington Wood.
Agaricus (Mycena) acicula Schæff. Esholt.
Agaricus (Omphalia) fibula Bull. Edlington Wood.
Agaricus (Omphalia) umbelliferus Linn. Northdean Wood, Halifax (C. Crossland and J. W. Sutcliffe).
*Agaricus (Pleurotus) tremulus Schæff. Edlington Wood.
Agaricus (Pleurotus) applicatus Batsch. Wadworth Wood (H. H. Corbett).
Agaricus (Pluteus) cervinus Schæff. Edlington Wood.
*Agaricus (Pluteus) ephebeus Fr. Edlington Wood.
Agaricus (Entoloma) fertilis Berk. Edlington Wood.
Agaricus (Entoloma) nidorosus Fr. Edlington Wood.
Agaricus (Entoloma) sericellus Fr. Edlington Wood.
Agaricus (Clitopilus) orcella Bull. Edlington Wood.
Agaricus (Leptonia) chalybæus Pers. Edlington Wood.
*Agaricus (Leptonia) euchrous Pers. Edlington Wood.
Agaricus (Nolanea) pascuus Pers. Pasture, Norland, Halifax (C. Crossland and J. W. Sutcliffe).
Agaricus (Nolanea) mammosus Linn. Esholt (H. T. Soppitt).
Agaricus (Pholiota) spectabilis Fr. Edlington Wood (W. White).
Agaricus (Pholiota) squarrosus Müll. Edlington Wood.
Agaricus (Pholiota) mutabilis Schæff. Edlington Wood. Ovenden, Halifax (G. L. Lister).
*Agaricus (Pholiota) radicosus Bull. Edlington Wood.
Agaricus (Inocybe) rimosus Bull. Edlington Wood. Mixed wood, Hebden Bridge (James Needham).
Agaricus (Inocybe) pyriodorus Pers. Edlington Wood.
*Agaricus (Inocybe) bongardii Weinm. Edlington Wood.
Agaricus (Hebeloma) crustuliniformis Bull. Edlington Wood.
Agaricus (Flammula) inopus Fr. Edlington Wood.
*Agaricus (Naucoria) cucumis Pers. Edlington Wood.
Agaricus (Galera) hypnorum Batsch. Edlington Wood. Northdean Wood, Halifax (C. Crossland and J. W. Sutcliffe).
Agaricus (Galera) tener Schæff. Edlington Wood.
Agaricus (Tubaria) furfuraceus Pers. Edlington Wood.
Agaricus (Psalliota) sylvaticus Schæff. Edlington Wood.
*Agaricus (Psalliota) hæmorrhoidarius Kalchbr. Edlington Wood.
Agaricus (Stropharia) æruginosus Curt. Edlington Wood. Ovenden (G. L. Lister).

Agaricus (Stropharia) semiglobatus Batsch. Edlington Wood.

***Agaricus (Stropharia) worthingtonii** Fr. Edlington Wood.

Agaricus (Hypholoma) sublateritius Schæff. Edlington Wood. Northdean Wood, Halifax (C. Crossland and J. W. Sutcliffe).

Agaricus (Hypholoma) fascicularis Huds. Edlington Wood.

Agaricus (Hypholoma) capnoides Fr. Edlington Wood.

Agaricus (Hypholoma) candolleanus Fr. Edlington Wood.

Agaricus (Hypholoma) appendiculatus Bull. Edlington Wood.

Agaricus (Hypholoma) velutinus Pers. Sandal Beat.

Agaricus (Psilocybe) semilanceatus Fr. Edlington Wood (W. White).

Agaricus (Panæolus) separatus Linn. Edlington Wood.

Agaricus (Psathyrella) atomatus Fr. Edlington Wood. Hebden Bridge (James Needham).

Agaricus (Psathyrella) disseminatus Pers. Sandal Beat.

Coprinus comatus Fr. Edlington Wood.

Coprinus atramentarius Fr. Ovenden (G. L. Lister).

Coprinus micaceus Fr. Edlington Wood. Ovenden (G L. Lister).

Coprinus lagopus Fr. Edlington Wood.

Coprinus plicatilis Fr. Edlington Wood.

***Cortinarius (Phlegmacium) sebaceus** Fr. Mixed wood, Hebden Bridge (James Needham).

***Cortinarius (Phlegmacium) anfractus** Fr. Edlington Wood.

***Cortinarius (Phlegmacium) fulgens** Fr. Edlington Wood.

***Cortinarius (Phlegmacium) orichalceus** Batsch. Edlington Wood.

***Cortinarius (Myxacium) livido-ochraceus** Berk. Edlington Wood.

Cortinarius (Dermocybe) anomalus Fr. Edlington Wood.

Cortinarius (Dermocybe) cinnamomeus Fr. Edlington Wood.

***Cortinarius (Hygrocybe) armeniacus** Fr. Edlington Wood.

***Cortinarius (Hygrocybe) junghuhnii** Fr. Edlington Wood.

Paxillus involutus Fr. Edlington Wood. Sandal Beat.

***Paxillus crassus** Fr. Edlington Wood.

***Hygrophorus chrysodon** Fr. Edlington Wood.

Hygrophorus eburneus Fr. Edlington Wood.
Hygrophorus cossus Fr. Edlington Wood.
Hygrophorus ceraceus Fr. Edlington Wood.
Hygrophorus conicus Fr. Edlington Wood. Pasture, Luddenden-dean, Halifax (C. Crossland and J. W. Sutcliffe).
Hygrophorus psittacinus Fr. Edlington Wood. Pasture, Ovenden (G. L. Lister).
Lactarius torminosus Fr. Edlington Wood.
Lactarius turpis Fr. Edlington Wood.
Lactarius insulsus Fr. Edlington Wood.
Lactarius blennius Fr. Edlington Wood.
Lactarius uvidus Fr. Edlington Wood.
Lactarius pyrogalus Fr. Edlington Wood.
Lactarius chrysorrheus Fr. Edlington Wood.
Lactarius vellereus Fr. Edlington Wood.
Lactarius exsuccus Smith. Edlington Wood.
Lactarius quietus Fr.
*__Lactarius subumbonatus__ Lind. Sandal Beat.
Lactarius glyciosmus Fr. Edlington Wood. Fir wood, Hebden Bridge (James Needham).
*__Lactarius fuliginosus__ Fr. Edlington Wood.
Lactarius volemum Fr. Edlington Wood.
Lactarius subdulcis Fr. Edlington Wood.
Russula nigricans Fr. Edlington Wood. Plantation, Ovenden (G. L. Lister).
Russula adusta Fr. Edlington Wood.
Russula densifolia Secr. Edlington Wood.
Russula furcata Fr. Edlington Wood.
Russula virescens Fr. Edlington Wood. Sandal Beat.
Russula rubra Fr. Plantation, Ovenden (G. L. Lister). Edlington Wood.
Russula cyanoxantha Fr. Edlington Wood.
Russula emetica Fr. Edlington Wood.
Russula fellea Fr. Edlington Wood.
Russula ochroleuca Fr. Edlington Wood. Sandal Beat.
Russula fragilis Fr. Edlington Wood. Plantation, Ovenden (G. L. Lister).
Russula lutea Fr. Edlington Wood. Sandal Beat.
Russula depallens Fr. Northdean Wood, Halifax (C. Crossland and J. W. Sutcliffe).

Cantharellus cibarius Fr. Edlington Wood. Beech wood, Hebden Bridge (James Needham).

*__Nyctalis asterophora__ Fr. Edlington Wood (Wm. White).

Nyctalis parasitica Fr. Edlington Wood.

Marasmius peronatus Fr. Edlington Wood.

Marasmius ramealis Fr. Edlington Wood.

Marasmius rotula Fr. Edlington Wood.

Marasmius epiphyllus Fr. Edlington Wood.

Lentinus cochleatus Fr. On stump, Ovenden (G. L. Lister).

POLYPOREÆ.

Boletus badius Fr. Northdean Wood, Halifax (C. Crossland and J. W. Sutcliffe).

Boletus chrysenteron Fr. Northdean Wood, Halifax (C. Crossland and J. W. Sutcliffe).

Boletus subtomentosus Linn. Northdean Wood, Halifax (C. Crossland and J. W. Sutcliffe).

Boletus edulis Bull. Edlington Wood.

Boletus scaber Fr. Edlington Wood.

Polyporus squamosus Fr. Malton (W. Hodgson). Ovenden (G. L. Lister).

Polyporus chioneus Fr. Edlington Wood.

*__Polyporus fumosus__ Fr. Edlington Wood.

Polyporus annosus Fr. Luddenden-dean (C. Crossland and J. W. Sutcliffe).

Polyporus versicolor Fr. Edlington Wood.

Polyporus abietinus Fr. Edlington Wood.

Polyporus ferruginosus Fr. Edlington Wood.

Polyporus sanguinolentus Fr. Norland Clough, Halifax (C. Crossland and J. W. Sutcliffe).

Polyporus vaporarius Fr. Edlington Wood.

Dædalea quercina Pers. Edlington Wood.

*__Merulius aureus__ Fr. Edlington Wood.

HYDNEÆ.

Hydnum repandum Linn. Mixed wood, Hebden Bridge (James Needham). Sandal Beat.

Hydnum alutaceum Fr. Edlington Wood.

Phlebia merismoides Fr. Edlington Wood.

Grandinia granulosa Fr. Sandal Beat.

THELEPHOREÆ.

Thelephora laciniata Pers. Edlington Wood.
Thelephora sebacea Pers. Edlington Wood.
Stereum hirsutum Fr. Edlington Wood.
Stereum rugosum Fr. Edlington Wood. Hebden Bridge (James Needham).
Corticium arachnoideum Berk. Luddenden-dean (C. Crossland and J. W. Sutcliffe).

CLAVARIEÆ.

Clavaria fastigiata Linn. Edlington Wood.
Clavaria cristata Pers. Elland (C. Crossland and J. W. Sutcliffe).
Clavaria cinerea Bull. Edlington Wood.
Clavaria inæqualis Fl.Dan. Edlington Wood.
Clavaria vermicularis Scop. Edlington Wood.
Clavaria rugosa Bull. Hebden Bridge (James Needham, of Woodend).
Calocera viscosa Fr. Sandal Beat. Ovenden (G. L. Lister).
Calocera glossoides Fr. Luddenden-dean (C. Crossland and J. W. Sutcliffe).

TREMELLEÆ.

Dacryomyces stillatus Nees. Ovenden (G. L. Lister).

GASTEROMYCETES.

Scleroderma vulgare Fr. Edlington Wood.
Crucibulum vulgare Tul. Edlington Wood.
*__Lycoperdon hoylei__ Berk. Doncaster (George Massee).
Lycoperdon gemmatum Batsch. Edlington Wood.
Lycoperdon pyriforme Schæff. Edlington Wood. Ovenden (G. L. Lister).
Lycoperdon perlatum Pers. Bolton Woods near Bradford.
Ithyphallus impudicus L. Esholt. Sandal Beat.
Mutinus caninus Fr. Ovenden (G. L. Lister).
Sphærobolus stellatus Tode. Elland (C. Crossland and J. W. Sutcliffe).

DISCOMYCETES.

Helvella crispa Fr. Sandal Beat.
Leotia lubrica P. Edlington Wood.
Leotia acicularis Pers. Northdean Wood, Halifax (C. Crossland and J. W. Sutcliffe).

Peziza aurantia Œd. Ovenden (G. L. Lister).

*Var. **atro-marginata** Phil. & Pl. Edlington Wood.

***Peziza adæ** Sadl. Edlington Wood.

Peziza vesiculosa Bull. Elland (C. Crossland and J. W. Sutcliffe.

Lachnea macropus Pers. Edlington Wood.

Lachnea hemisphærica Wigg. Edlington Wood.

USTILAGINEI.

***Tilletia rauwenhofii** F. v. Waldh. Sandal Beat.

***Sphacelotheca hydropiperis** Schum. Sandal Beat.

NOTES AND NEWS.

The August number of the Quarterly Journal of the Geological Society contains an elaborate and detailed memoir on 'The Shap Granite, and the Associated Igneous and Metamorphic Rocks,' by Messrs. Alfred Harker, M.A., F.G.S., and J. E. Marr, M.A., Sec.G.S. The illustrations include woodcuts, a Sketch-map and two plates of Microscopic rock-sections.

At the beginning of August the Cumberland and Westmorland Association for the Advancement of Literature and Science held its annual meeting at Maryport, when the president, the Bishop of Barrow-in-Furness, delivered an address on the local archæology of the neighbourhood of Kirkby Lonsdale—a district in which he had lived 26 years. Mr. Gully, M.P. for Carlisle, was elected President for next year's meeting, and Mr. H. L. Barker, of Silloth, was re-elected as honorary secretary, Mr. J. G. Goodchild, F.G.S., as Editor of the Transactions, Mr. Robert Crowder as librarian, Mr. Goodchild as delegate to the British Association, the Rev. H. A. Macpherson, M.A., and Mr. J. N. Robinson as zoological recorders, and Mr. R. Wood and Mr. William Hodgson, A.L.S., as botanical recorders.

Numerous interesting original papers were then read. Mr. Goodchild lectured on 'Cumberland and Westmorland Limestones,' and Mr. J. Postlethwaite, of Keswick, read a paper on 'The Cleaved Ashes and Breccias of the Volcanic Series of Borrowdale,' subjects of great interest to geologists.

But perhaps the most generally interesting paper is the one by the Rev. H. A. Macpherson, M.A., upon 'The present state of our knowledge of the fishes of the North-West coast of England, with special reference to the Solway Firth,' the appearance of which in the Society's forthcoming volume of Transactions will be awaited with feelings of keen anticipation, as nothing has been done in this department of research since Dr. Heysham published his catalogue of local animals, so that Mr. Macpherson's work will mark a distinct advance in knowledge.

The fruits of the visit which the Mayor of Halifax, Mr. James William Davis, F.S.A., etc. (whom we are glad to be able to congratulate on having that dignity conferred upon him for a second term), and his friend Mr. A. Smith Woodward, paid in 1889 to some of the principal museums in Sweden and Denmark, have appeared in the form of a lengthy paper illustrated by nine beautifully lithographed plates, 'On the Fossil Fish of the Cretaceous Formations of Scandinavia,' published just a year ago as one of the parts of the quarto Scientific Transactions of the Royal Dublin Society, and including a considerable number of species new to science.

OBSERVATIONS ON THE WHITE WAGTAIL.

O. V. APLIN, M.B.O.U.,

Author of 'The Birds of Oxfordshire.'

As I have recently (June, 1891) seen something of the White Wagtail (*Motacilla alba*) in Switzerland, I venture to add a few notes to those of Messrs. Whitlock and Macpherson.

I paid especial attention to two points, viz., the amount of black on the head of the adult female (vide Zool., 1890, page 375), and the note of the White as compared to that of the Pied Wagtail.

I was only able to see three birds which I could be pretty sure were females, as the pairs were seldom together. One of these, which I was able to examine at close quarters on the landing-stage at Thun, had a grey crown and occiput. Another, one of a pair on a châlet roof in Meiringen, had a good deal of black on the head, although less, of course, than the male. The third bird also had black on the head. All the other adults that I saw had, more or less, black caps, and, of course, some of these may have been females. The only sexed female I could find in the Bern Museum had moulted into autumn dress; it had *no* black on the head, and an unsexed bird (apparently a bird of the year), in autumn dress, had also a grey crown. In the result my few observations seemed to confirm the opinion I expressed last year, that 'This grey-crowned plumage in *Motacilla alba* (female) can hardly be universal, or it would surely have been noticed by some of the many ornithologists who have observed the White Wagtail on the continent.'

As to the notes of the two species. Having this matter in my mind I took every opportunity of listening carefully to the notes of the Pied Wagtail before leaving England, and as a pair were building in some pollard willows in front of my windows I had considerable facilities for getting the notes well into my head. The White Wagtail was considerably more common (in the lower grounds) in Switzerland than the Pied Wagtail is with us, so I heard a good many. I found, as I expected, great difficulty in coming to a conclusion, for this reason: the note of the Pied Wagtail varies so much in pitch, intensity, and volume, that it seems impossible to say *how* loud the average '*physic*' (to use the lettering mentioned by the late Frank Buckland) of that bird is. The White Wagtail's note also varies according to my limited observation of it, and my study of it was sometimes embarrassed by the sound, so common in Switzerland, of rushing water; nevertheless I had also a good many uninterrupted listenings. The most I find myself able to say is that I never heard

the White Wagtail utter a note so loud as those which the Pied Wagtail occasionally gives vent to.

The White Wagtail is certainly a most elegant bird, and I agree with Mr. Macpherson in thinking that it has a more graceful slender appearance. The few skins I have by me seem on the whole to bear this out, but the Pied Wagtail, like many other birds, varies a little in size.

How far the more slender appearance in life may be due to the respective colours of the birds I cannot say. Would the black bird naturally appear more robust than the grey one, or not? I have rarely seen more elegant birds, both for shape and colour, than the full-fledged young White Wagtails, which were especially noticeable when running over the newly-mown hay grass. The whole of the upper parts, with the exception of the wings and tail, are light dead grey (wanting the clear pearly hue seen in old birds), and there are none of the dusky shades seen in the young of the Pied Wagtails, nor any signs of the dusky bands at the sides of the cap. A dark crescent on their light breasts is conspicuous. An adult at Stansstad, with a little black on the head (and probably a female), was the only one I saw which showed any mottling on the back; it was a peculiar looking bird, with almost a rusty shade about it. It is a pity that the grey rump, as the distinguishing mark of the White Wagtail, is not better known, as a *M. yarrelli* in autumn dress occasionally figures as *M. alba*.

I often saw the White Wagtail perching on roofs (both those of châlets and of stone houses) in the towns and villages; in Bern, Interlaken, and Meiringen, for instance. But I may say the same of the Pied Wagtail, more especially in villages (for our bird is not so fond of towns as his continental relation) in England.

The White Wagtail takes a great deal of insect food on the wing, and, I think, hawks flies to a greater extent than our bird does. It was pretty to watch the former, old and young, at Meiringen flitting along the stone banks of the rushing river Aare, and hawking insects over the water. Some would flit right across, fluttering and jerking in the air as they captured the flies by the way; others, pausing a few seconds in mid-stream, returned to the bank they started from. But winged insects are very abundant in Switzerland, and possibly tempt many birds to feed in this fashion. Dippers were hawking for flies in the air in the same place.

I did not meet with the White Wagtail at a greater elevation than about 3,300 ft. But this was in June, and the season was a late one, snow lying in a large mass, where it had slipped down on to one alp as low down as about 4,000 ft. In one locality (6,000 ft.)

we failed to find the Grey Wagtails which usually spend the summer there, although I saw one on the same stream some way lower down. Probably the White Wagtails would go up higher later on.

As Mr. Macpherson states that he does not remember having seen the Pied Wagtail feeding on the refuse of farm-yards, I may just mention that I have frequently observed this bird feeding in farm and cattle yards, both in summer and winter; the few birds which winter with us, indeed, are very partial to such localities, for there they can generally make sure of a supply of food.

I have seen one White Wagtail in England this year, viz., a male, by the brook close to this village (Bloxham), on the 26th April.

NOTES—ORNITHOLOGY.

White Variety of the Thrush in Upper Nidderdale.—While grouse shooting on Deadman's Hill and Little Whernside, on August 12th, a white Thrush (*Turdus musicus*) was seen, and on the 14th was shot by the side of the Nidd just below Deadman's Hill. It proved to be a bird of the year, and the plumage was in very bad condition.—RILEY FORTUNE, Harrogate, Sept. 13th, 1891.

Late Nesting of Yellowhammer near Pickering.—A friend and myself, while hunting for rabbits here on 2nd September, found in a furze-bush a Yellowhammer (*Emberiza citrinella*)'s nest with three eggs, and these were hatched between Saturday the 5th and Monday the 7th September. Is not this unusually late and worth noting?—HERBERT PRODHAM, Allerston, near Pickering, Oct. 7th.

[Not very unusual.—W.E.C.]

Flamborough Bird-Notes.—Large quantities of sea birds have frequented the cliffs and the coast of Flamborough this season. Guillemots (*Lomvia troile*), Razorbills (*Alca torda*), Puffins (*Fratercula arctica*), and Kittiwakes (*Rissa tridactyla*); also numbers of Sea Swallows (*Sterna, spp.*), Skuas (*Stercorarius, spp.*), and Gannets (*Sula bassana*), are seen along the coast. I have by me a splendid variety of the Guillemot, nearly all white, obtained here this season. On Sept. 17th I observed a flock of twenty-four Canadian Geese (*Bernicla canadensis*), flying over the Headland, going southward. From the above date up to now several summer migrants have been making for the Headland, ready to take their departure. Speaking to one of our farmers the other day, I asked him if he had seen any Hooded Crows (*Corvus cornix*) this season. The remark he made was: 'there are sixteen old pensioners in that plantation who have been there all summer.'—MATTHEW BAILEY, Flamborough, Oct. 7th, 1891.

LOCAL LISTS OF BIRDS.

A Catalogue of Local Lists of British Birds, arranged under Counties. By MILLER CHRISTY, F.L.S. [Reprinted, with numerous additions, from The Zoologist, third series, vol. xiv. (July 1890), pp. 247-267].- Price Two Shillings.—London: R. H. Porter . . . [&c.] . . . 1891.

This unpretending little brochure, which extends to 42 pages octavo, is the record of a vast amount of labour and research, which none but those who have undertaken work of a similar class can fully and adequately, or even at all, appreciate. Having ourselves had occasion recently to make a tabulation which involved reference

to the local lists of our northern counties, we found Mr. Christy's catalogue of great utility and very complete, the only omissions which we have been able so far to discover being the following:—

AIKIN (W. O.).—Birds of Somersham, Hunts. The Zoologist, 1845, iii. 855-856.

BRIGGS (J. J.).—The Birds of Melbourne, [Derbyshire]. The Zoologist, 1849, pp. 2475, 2559, 2603, and 1850, pp. 2793, 2817, and 2949.

GLOVER (STEPHEN).—A Sketch of the Zoology of Derbyshire . . . Class 2. Birds.—The History of the County of Derby, vol. i. 1829, pp. 139-166.

KNOX (A. E.). Notes on the Birds of Sussex. The Zoologist, 1843, i. 137 et sequ.

The first three, however, involve one of the statements which Mr. Christy makes in his introduction, wherein he cites Derbyshire and Hunts as among the counties to which but scant attention has been paid. No doubt this still remains correct so far as regards Hunts, but in justice to Derbyshire, it is noteworthy that Mr. Briggs' list of the Birds of Melbourne is a very full and detailed account of the avifauna of the area of which it treats, while Glover's list includes as many as 165 species.

We note that in some few instances annotations are made, such as the number of species enumerated in some of the local lists, and statements as to the reliability or unreliability of the list. It would perhaps have been better for the latter class of remarks to have been more uniformly and systematically given, and for the statistics to have been appended to every list, avoiding however the method in which Macpherson and Duckworth's 'Birds of Cumberland' is dealt with. This is quoted under Westmorland on the strength of the sub-title 'With Notes of the Birds of Westmorland,' and a note appended to the effect that it enumerates 250 species. A reference to the book itself, however, shows that the 250 species are Cumbrian, and that only an extremely limited number of birds are noted as having been observed for Westmorland. We note also that our own journal is referred to throughout as 'The Naturalist (Y.N.U.).' Wherefore the latter clause is not apparent; reference to covers and title-pages will show that this journal is simply 'The Naturalist,' and should be so quoted, with the addition of the year and page.

Mr. Christy has, however, done his work extremely well and with as near an approach to the completeness which he claims in his introductory observations as may reasonably be expected, and we heartily congratulate him upon the result.—W.D.R.

STROBILOMYCES STROBILACEUS IN SOUTH-WEST YORKSHIRE.

HENRY T. SOPPITT,
Bradford.

Of the many fungi forwarded me from various localities during the past few weeks, none have proved more interesting than *Strobilomyces strobilaceus* Berk., an example of which was recently sent by Mr. J. Sutcliffe, of Paddock. The specimen—which is a good typical example—had been collected by Mr. John Carter, of Huddersfield, in a wood between Elland and Brighouse, near Tag Lock. Mr. Carter has also, I am informed, met with this species once before in the Huddersfield district, in Mollicar Wood near Farnley Tyas. The records are interesting, as this species is regarded as 'very rare' so far as Britain is concerned; hitherto, in fact, being confined to a few localities in the Midland Counties. My first acquaintance with it in a living condition was some nine years ago, at Woodeves Coppice, near Ludlow, while on a fungus foray with the Woolhope Club.

Mr. Geo. Massee, F.R.M.S., of Kew, has kindly furnished me with its distribution, which is as follows:—'Bulstrode (Bucks), Lightfoot's original locality; Gopsall (Leicestershire); Ludlow (Salop); Haywood Forest (Hereford); most European countries, United States and Canada. The head-quarters of the genus is in E. Australia.' Now that the fungus has been found at Huddersfield, in all probability it will, with the increase of mycological students, be met with in other localities.

20*th November*, 1891.

NOTE—MAMMALIA.

The Wild Cat in Cumberland.—In the September issue of 'The Naturalist,' at page 258, in the 'Bibliography: Mammalia, 1888,' appears, under the authority apparently of Mr. Gerald Lascelles, a statement that the true wild cat still exists in Cumberland. This I very much doubt. It is quite true that at very rare intervals we hear of so-called wild cats being shot or trapped on our fells; but none that I have ever seen during the last 60 years corresponded either in size, conformation, or markings with the true *Felis catus* of naturalists, however they may be classed by sportsmen. At the present moment may be seen in the hands of Mr. Robinson, a Workington taxidermist, what purports to be 'a wild cat shot on Skiddaw,' which I agree with Mr. Robinson in regarding as a waif from some domestic hearth, or possibly the offspring of some such houseless wanderer. The last bonâ fide wild cat of which I have any authentic record was killed by a private pack of foxhounds kept at Baldhow, under Great Mell Fell, at the close of last century, or very early in the present one. Full in sight from that mountain, at the northern base of Gowbarrow Fells, in the parish of Watermillock, lies the straggling hamlet of Ulcatrow, popularly believed to be a corruption of Wild-Cat-Row, and therefore a testimony of the former existence of the wild cat thereabouts from a very remote period.—Wm. Hodgson, Workington, October 30th, 1891.

NOTES—BOTANY.

Varieties of Carex Goodenovii and Helianthemum Chamæcystus at Hayburn Wyke.—At the excursion of the Yorkshire Naturalists' Union to Hayburn Wyke on July 11th, 1891. two plants were found which I think are worth recording. Since I returned to London I have been looking over the gatherings of that day, and find amongst them the var. *juncella* (Fries) of *Carex Goodenovii* (J. Gay) (*C. vulgaris* Fries). It was growing in the bog on the small moor near Hayburn Wyke station, and one of our party, whose name I do not know, gathered a very pretty form of *Helianthemum Chamæcistus* (Mill.), with a brown spot one ach petal, which appears to be somewhat like a variety of the same plant found some years ago by Mr. W. D. Snooke in the Undercliff, Isle of Wight, the difference being that the Isle of Wight plant has one or more rings and ours a spot. This is what Mr. A. G. More says in the Supp. Flo. Vect.: '*Helianthemum vulgare* (Goert), var. *β petalis basi-aurantiis*' Snooke (Flor. Vectiana). The flowers are marked with a dark yellow or orange ring at the base of the corolla. Sometimes this ring is double, and I have seen occasionally a few purplish marks towards the top of the petals in the same flowers, but in other respects the variety does not differ from the usual form of *H. vulgare*.' J. of Botany, 1871, p. 136.—Walter W. Reeves, London, 29th October, 1891.

Volvox.—The passage quoted by Mr. Lord from the Journal of the Royal Microscopical Society is a good illustration of the fact that a condensed statement is not rarely ambiguous. What the writer meant to say, I have no doubt, was this—that in *Volvox globator* only two kinds of colonies are met with, viz., (1) Non-sexual ones and (2) sexual ones that are usually proterogynous. At any rate this is what Dr. Klein himself states in the paper abstracted, a copy of which he has been kind enough to send me. The importance of the statement is indicated by the next passage of the abstract in the Microscopical Journal, in which it is said that in *V. aureus* as many as twenty-one different combinations are possible and actually exist. The fact is *V. aureus* exhibits a remarkable case of pleomorphism, for without losing its specific characters it presents itself in a large number of forms, differing in composition as regards sterile and fertile cells, and the degree of development attained by the reproductive cells of the young colonies before they leave the parent colony. In a still later paper by Klein the number of observed varieties, so to call them, is increased to twenty-four, and he has come to the conclusion that they are due to the influences of the environment, and are especially dependent upon nutrition. To this he looks for an explanation of the alternation of sexual and asexual propagation, and even for that of the sexual differences themselves. In sharp contrast to all this *V. globator* seems to vary but little, and only occurs in the two forms mentioned above. As to *V. stellatus* it is, as previously stated, generally spoken of as the female colony of *V. globator*. Since, however, the sexual colonies are monœcious, it ought in strictness to be spoken of as the sexual colony of *V. globator* with ripe oospores. In Dr. Cooke's statement respecting *Sphærosira volvox* I think we have a survival of the confusion which has so long prevailed in this country in connection with the species of Volvox.—Thomas Hick, Manchester, November 14th, 1891.

NOTE—LEPIDOPTERA.

Lepidoptera in Upper Swaledale, August 1890.—At the excursion of the Yorkshire Naturalists' Union to Keld and Kisdon, on August 3rd to 5th, 1890, the following lepidoptera were observed on the wing:—*Chortobius pamphilus*, *Lycæna alexis*, *Larentia cæsiata* (abundant on the summit of Kisdon, flying off in swarms from the stone walls on being disturbed), *L. olivata* (also plentiful in the rocky gullies and watercourses descending from the moors), *Melanippe montanata*, *Tanagra chærophyllata*, *Caradrina cubicularis*, and *Pterophorus pterodactylus*. Of *Larentia olivata* Mr. G. T. Porritt informs me that it is met with in several Yorkshire localities, but that he has never taken it in the county himself.—J. H. Rowntree, Scarborough.

ORNITHOLOGICAL NOTES FROM THE HUMBER DISTRICT, IN THE AUTUMN OF 1891.

JOHN CORDEAUX, M.B.O.U.,
Eaton Hall, Retford.

BEYOND my own personal observations on both sides of the Humber in the autumn of 1891, my best thanks are due in preparing this notice to Mr. G. H. Caton Haigh, of Grainsby Hall, for his many excellent notes, taken by him in connection with the Lincolnshire coast; also to Mr. Hewetson, of Leeds, and Mr. Philip Loten, of Easington, for information on the migration of birds on the coast of Holderness.

Totanus ochropus (Linn.). **Green Sandpiper.** June 20th. Was first observed on this date on the Humber-side ponds on Easington fitties. Generally, they visit our small streams and becks in July, and in August and September are often in considerable numbers.

Porzana maruetta (Leach). **Spotted Crake.** I saw one in Mr. Kew's shop which was killed against the telegraph wire, near Louth, about the middle of June. Mr. Haigh told me that when snipe-shooting last year, he found two old nests, presumably belonging to the Spotted Crake, amongst sedges (*Carex riparia*) growing in an old disused river-channel, they were like those of a waterhen, but less in size, and composed of fine grasses and sedges.

Numenius phæopus (Linn.). **Whimbrel.** Mr. Haigh saw a few at Tetney on July 9th, and I heard them passing over at Great Cotes on the 16th; very plentiful all through the season. I saw a few at Spurn on Sep. 30th.

Totanus hypoleucus (Linn.). **Common Sandpiper.** A few in pairs on the coast-drains, in the second week in July. On Aug. 5th I found them extremely plentiful on the mud-slopes of Tetney Haven, rising in quick succession so as almost to form a considerable flock, and, with bent wings, following the course of the outfall through the fitties.

Totanus glareola (Linn.). **Wood Sandpiper.** Mr. Haigh flushed three, widely apart, on July 21st, from the sides of old disused creeks, amongst cultivated land near the coast. Subsequently several have been seen and obtained in August, on both sides of the Humber. Altogether I have examined six, and all of

these birds of the year. Mr. Haigh says when flushed they rise with a single cry, and are not nearly so noisy as the Green Sandpiper; and when they alight again, it is invariably in rough herbage, and not on bare muds or banks, as the latter does. Probably more examples have been seen this autumn than in the whole of the last ten years put together.

Totanus canescens (Gmel.). **Greenshank.** July 21st. One seen and another heard at Tetney by Mr. Haigh; this date is a very early one. I saw several in the same locality on Aug. 5th, and again on Saltfleet fitties on the 18th. They were pleasingly tame, having so far not been shot at. On the latter day I got quite close to one feeding on the mud-slope of the Haven side, and was able to watch its movements.

Gallinago cœlestis (Frenz.). **Snipe.** August 5th. In considerable numbers at this date, about the foreshores, near the coast. These are not 'over-the-sea' snipe, but local birds, bred in the district, and which, about the middle of July, draw towards the coast-drains and fittie-pools.

Tringa canutus Linn. **Knot.** August 5th. Some small flocks at Tetney. Tens of thousands on the Spurn muds at the end of September. A few old birds shot early in the season had faded red under-parts.

Saxicola œnanthe (Linn.). **Wheatear.** Aug. 5th. I saw the first migratory Wheatears to-day. On the 31st many lovely birds, and some Yellow Wagtails; and a month later, near the Holderness coast, Wheatears were still very numerous in fallow fields, and perching much on the low wind-clipt fences. Last observed on October 22nd. Nov. 8th. A very fine adult male in winter dress this afternoon on Easington fitties; on the presumption that a late Wheatear might perhaps turn out one of the rarer species visiting these islands, I observed it for some time at close quarters with a glass, so as to be quite certain of its identity.

Totanus calidris (Linn.). **Redshank.** August 5th. In flocks of twenty to thirty on coast, also rising singly; very many seen. Mr. Gätke writes: '14th August—commencing at 9 p.m., and lasting to 3 a.m. on 15th. Millions of *T. calidris*, *Numenius phæopus* and *arquata*, *Charadrius hiaticula*, and all kinds of *Tringæ*, mixed with as many call-notes of kindred folks unknown, or in the general chaos not to be made out. All must have crossed and passed over your part of the world. Here atmosphere pitch dark, with the last of a Scottish mist and almost calm.'

Squatarola helvetica (Linn.). **Grey Plover.** Aug. 18th. I saw three together on Saltfleet fitties, two of these in perfect summer dress, and the other partly in transition to winter plumage. A few examples in summer dress were shot near Kilnsea in August. Altogether, however, the Grey Plover has not been nearly so numerous this season as in late years.

Sterna cantiaca Gmel. **Sandwich Tern.** I saw a small band of these handsome Terns off Saltfleet Haven on Aug. 18th. In 1889, on Aug. 31st, in the same locality, I had seen and recorded very great numbers.

Sterna macrura Naum. **Arctic Tern.** I found very considerable bands on the coast in the third week in August, between Mablethorpe and Saltfleet Haven; also Common Tern, but in much less numbers. Mr. Haigh saw a few Arctic Tern at Tetney on October 2nd.

Calidris arenaria (Linn.). **Sanderling.** Fairly common in August and September on both sides of the Humber.

Upupa epops Linn. **Hoopoe.** One shot at Easington-in-Holderness, in August.

Hydrochelidon nigra (Linn.). **Black Tern.** A few young birds on the coast early in September.

Hæmatopus ostralegus Linn. **Oyster-catcher.** Sept. 2nd. In flocks of hundreds on Lincolnshire coast.

Larus minutus Pall. **Little Gull.** Sept. 3rd. One, immature, and an unusually dark-backed example, was shot by Mr. Haigh at Donna Nook.

Phalaropus fulicarius Linn. **Grey Phalarope.** Sept. 9th. An immature female shot by Mr. R. Hewetson on one of the ponds on Easington Humber-side fitties: a few pearl-grey feathers showing through the dark plumage of summer on the back. Oct. 15th; one shot at North Cotes by F. Stubbs, on his inland pool where Lapwings are netted. This, from its small size I should say is a male. Another was shot on the 19th on the Humber-side ponds at Easington-in-Holderness, and again another, a female, on the 21st.

Totanus fuscus (Linn.). **Dusky Redshank.** Sept. 9th. One flushed by Mr. Haigh from an inland creek near the North Cotes bank. Mr. Haigh, who meets with this somewhat uncommon species every year, says that on the wing its general appearance is much the same as the Redshank, but it is a longer-looking and slenderer bird and lacks the white patch on the wing so conspicuous in its congener. It rises with a single

sharp note, often quickly repeated, mounting directly to a considerable height as if going away altogether, and as likely enough will suddenly sweep down and alight at no great distance. In 1890 he found five together in a disused and silted-up water-course in the middle of a wheat-field at North Cotes.

Tringa minuta Leisl. **Little Stint.** Sept. 11th. Mr. Haigh killed this and a Curlew Sandpiper at the same shot. There were three of the former and two of the latter. Both have also been seen at the Spurn; and a Little Stint, but too far gone for preservation, was picked up on the warren, having been killed against the telegraph-wire.

Muscicapa atricapilla Linn. **Pied Flycatcher.** Sept. 11th. A young bird of the year was shot by Mr. Haigh far out on the fitties at Tetney, sitting on a lump of mud in one of the creeks.

Machetes pugnax (Linn.). **Ruff** and **Reeve.** These have been unusually common on both sides of the Humber, and Mr. Haigh thinks there have been more this year than in the last half-dozen years put together. The majority obtained, several of which I have handled, have been Ruffs; the Reeve appears to be the much less common of the two. The last entry of them in my note-book is five seen near Easington on Oct. 16th.

Tringa striata Linn. **Purple Sandpiper.** Sept. 19th. An immature male shot near Kilnsea. The Purple Sandpiper seems much less common in the autumn than formerly. I used to meet with young in small flocks at Spurn in August and September.

Regulus cristatus Koch. **Golden-crested Wren.** After a N.E. gale on Sunday night, Sept. 20th, many hundreds were seen in the storm-clipt hedges surrounding the fields at Kilnsea on the 22nd and 23rd. They had entirely gone within twenty four hours after the latter date.

Vanellus vulgaris Bechst. **Lapwing.** Sept. 23rd and 24th. There was a large passage observed on these days, across the Tetney fitties, by Stubbs, the bird fowler. Oct. 16th. Spurn: half-gale from S.W.; Lapwings were coming in continuously during day, and on Oct. 22nd, at Tetney, flocks to W. all day.

Lanius excubitor Linn. **Great Grey Shrike.** Sept. 24th. An immature male, a very fine example, shot at Kilnsea; finely vermiculated on the under parts. Oct. 27th. One seen at Easington, and several early in November.

Falco æsalon Tunstall. **Merlin.** Sept. 24th. I have an immature female, shot near Easington on this date. Mr. Haigh saw one on the Tetney fitties on the 26th, and I saw at Mr. Kew's, of Louth, an immature female shot on October 1st on the coast near Mablethorpe.

Nyctea scandiaca (Linn.). **Snowy Owl.** Sept. 27th. One, an apparently pure white bird, was seen by Mr. Hewetson and Mr. Henry Marsh, of Leeds, myself, and another, in a fallow field near Easington lane end, and was under observation between five and ten minutes. The occurrence was fully recorded in 'The Field' newspaper of October 3rd. Snowy Owls are reported as having been very common in the south of Norway this year, having followed the Lemmings on their migration towards the coast.

Ruticilla phœnicurus (Linn.). **Redstart.** Sept. 28th. One, a female or a young male, with Wheatears, near Easington lane end. I saw another in a hedge at Out Newton, on Oct. 2nd. Mr. Haigh also saw a Redstart in a hedge at Tetney on the same day; these are late occurrences for this bird to be on passage up the coast. The one seen by me on Sept. 28th flew down from a roadside hedge and picked up some small object from the grass; it looked almost as dark as a Hedge Sparrow, which I thought it was, till I saw the red tail as it flew up. I did not see it again, although remaining near the place where it disappeared for some time, suspecting it might have been a young male of *R. titys*.

Alauda arvensis Linn. **Lark.** Sept. 28th. W. to S.W. strong. On the coast, near Kilnsea, early this morning, I saw some small flights come in directly from the sea-horizon, flying low so as just to clear the water, and dispersing at once in the fields along the coast. They passed in perfect silence and seemed very wing-tired and nearly exhausted.

> **Faint as a climate-changing bird that flies**
> **All night across the darkness, and at dawn**
> **Falls on the threshold of her native land,**
> ***And can no more.***

Mr. Haigh told me that, when on the North Cotes sands on October 2nd, he noticed Larks coming in all day, close to the ground, at intervals of about ten minutes and in flocks of less than a score. Oct. 17th, Easington, constant all day to south. Oct. 21st, Tetney, almost continuous all day to S.W. Oct. 21st to 29th, Holderness coast, immense numbers with others.

Scolopax rusticula Linn. **Woodcock.** Sept. 28th. One seen to drop in a bean-field at Kilnsea. Oct. 16th, half-gale from S.W.; one seen. Oct. 26th, Spurn, first flight, wind N.E., but comparatively few on this and following days; greatest number obtained by one gun—eleven. Nov. 5th, there was a second flight at the Spurn this morning, with a N.E. wind. A few single 'cocks' also have been dropping in at intervals since the first flight on October 26th. Nov. 21st, a third flight, four shot at Kilnsea.

Podicipes fluviatilis (Tunst.). **Little Grebe.** Sept. 28th. Three appeared for the first time this season, on the ponds near Kilnsea coast beacon. Have been very common since this date.

Cypselus apus (Linn.). **Swift.** Sept. 30th. I saw one near the Spurn lighthouse this morning. Easington, Oct. 18th. Swallows, House-Martins, and a few Swifts all day to south, low on sands and edges of cliff (Hewetson in litt.).

Anser brachyrhynchus Baill. **Pink-footed Goose.** Sept. 30th. A large flock first appeared at Thorsway, on Lincolnshire Wolds, and others were heard passing over at Grainsby at daybreak on October 3rd.

Gulls. Sept. 26th to 30th inclusive, Easington and Kilnsea shore. The Gulls here are a wonder and marvel to me. Where can they all come from, and whither do they go? Since Saturday morning the 26th, to Tuesday night the 29th, it has been blowing almost continuously strong from S. and S.W., and during all this time Gulls have been passing, early and late, and all times during the day and probably also during the night, up the coast from the north to the south. I never look from the window to the line of sea across the hollow in the land, but I see large Gulls beating past against a head wind; no sooner has one lot gone than another comes in sight. The number in each lot vary from half a dozen to a score and upward, now in close order and then in a straggling fashion. The majority are Lesser Black-backed Gulls, both old and young; sometimes Herring Gulls or Great Black-backed, also some Kittiwakes. In four days the stream never diminished, but rather increased. On the fifth day (Sept. 30th) they were still passing, but in greatly reduced numbers, and at considerable intervals of time between the flocks—perhaps sometimes for a quarter of an hour none came past. On this last day, too, all I saw, almost without exception, were young Lesser Black-backs, in the first year's plumage.

Falco tinnunculus Linn. **Kestrel.** Have been extraordinary abundant in Holderness and North Lincolnshire in September. I have never seen so many in any previous year. A few Sparrowhawks also, but few compared with the former.

Phalacrocorax carbo (Linn.). **Cormorant.** Is becoming a very common species about the estuary of the Humber, in localities on both coasts where only a few years since we very rarely saw one.

Corvus cornix Linn. **Grey Crow.** Oct. 6th, a few seen by Stubbs, at Tetney. Several on the stubbles at early morning at Great Cotes on the 10th.

Linota flavirostris (Linn.). **Twite.** Oct. 9th, Mr. Haigh, who was on the coast to-day, says Twites were coming in by thousands, and Rock-Pipits, Song-Thrushes, Starlings, Robins, and Rooks were numerous. Also Corn Buntings; a flock of the latter, numbering about 100, rose from turnips close to the coast.

Fringilla montifringilla Linn. **Brambling.** Oct. 9th, Mr. Haigh picked up an old cock dead in the long grass on the North Cotes bank, where it had probably dropped exhausted on reaching land. Oct. 22nd. S.W. light; young female shot in same locality.

Asio accipitrinus (Pall.). **Short-eared Owl.** Oct. 9th. One flushed on a stubble at North Cotes, and the first I have heard of this season. Oct. 24th. A few near Spurn, a strong N.E. wind blowing, and many in first week of November.

Turdus merula Linn. **Blackbird.** Oct. 10th. Early this morning it was evident that there had been a considerable influx of Blackbirds during the night. I counted at Great Cotes in a few minutes at least fifty, also some Thrushes and Mistletoe Thrushes, pass from one thorn to another, and all working their way in the same direction from the coast inland.

Turdus torquatus Linn. **Ring Ouzel.** Oct. 1st. One shot at Little Cawthorpe, near Louth. Oct. 16th. One shot at Easington and another on the 18th, and from the 21st to the end of the month many adult, both male and female, came in on the Holderness coast with Fieldfares.

Fringilla cœlebs Linn. **Chaffinch.** Oct. 15th. Chaffinches in flocks to south. 21st, wind S. fresh, Tetney coast, large flocks all day to S.W.

Corvus frugilegus Linn. **Rook.** Oct. 16th. S.W. half-a-gale, Easington coast, constant streams from sea-horizon inland. 22nd. Tetney, a few to south during day.

Iynx torquilla Linn. **Wryneck.** Oct. 17th. One, a male, shot near Easington.

Strix flammea Linn. **Barn Owl.** Oct. 17th. Two at Easington taken alive, tired out; several seen (Hewetson in litt.). Oct. 24th, N.E. strong, one at Spurn with both the Short and Long-eared Owl.

Sturnus vulgaris Linn. **Starling.** Oct. 22nd. Great numbers in coast marshes at Great Cotes. Millions on fitties at Tetney (Haigh in litt.).

Plectrophanes nivalis (Linn.). **Snow Bunting.** Oct. 18th. S.W. backing to S.E., strong, Easington, first seen on Lincolnshire coast, 29th.

Anser cinereus Meyer. **Grey-lag Goose.** One, which I saw at the shop of Mr. Jeffreys, Grimsby, was shot at by Mr. Haigh on October 17th, on the sea farm at Tetney, and finally obtained on the 19th. It was a small bird, and did not weigh more than 7 lbs.; when seen it was alone. Several single Grey Geese were seen since the 17th, and, on the 21st, a flock of twenty passed inland from the coast near Tetney Haven.

Puffinus anglorum (Temm.). **Manx Shearwater.** I have met with four inland occurrences this autumn—One, on the first of September, killed by a reaping machine at Wooton, in North Lincolnshire; another, which I have, was picked up at Grainsby by a working-man, about the middle of October; one also in Holderness, and another near Retford (Notts.).

Turdus iliacus Linn. **Redwing.** Oct. 21st. S. fresh. Tetney; one flock to S.W.—a few also in turnips. There appears to have been a wonderful rush of migrants on this day; Mr. Hewetson, writing from S.S. 'Gotha,' off south-east coast of Norfolk, says (and it is the same story so often told from our light-vessels): 'To-day, off Donna Nook, Boston Deeps, and Wash, continuously an unceasing stream of migrants flying S.W. by W. right in the wind. Larks by thousands in continuous flocks. Thrushes the same—one came into cabin. Redwings—one also came on board. Large flocks of Tree Sparrows, several on board. Any quantity of Brambling, three caught, Starlings, Grey Crows, and a few Rooks; Pipits, many; one Ring Ouzel; male and female Chaffinches, innumerable. I do not think I have omitted any; but it was not possible to look eastward without seeing advancing flocks. This lasted from noon till dusk. Some were very tired, especially the Tree Sparrows, Chaffinches, and Bramblings, all of which kept to the ship. We caught them with a basket and stick.'

Turdus pilaris Linn. **Fieldfare.** Oct. 27th and 28th. Strong N.E. wind. A great immigration of Fieldfare on the Holderness and Lincolnshire coast. On the 29th, Mr. Haigh saw hundreds resting under the lee of the seabank all the way between Grainthorpe and Saltfleet Havens. Near Spurn, on the 28th and 29th, the numbers are reported as immense. On the 28th, I saw large flocks near Thoresby and Clumber Parks, in Notts. All agree that the migration of these at Spurn, on the 27th, 28th, and 29th of October was without parallel in the district, flock succeeding flock in quick succession, and passing along the coast from north to south. Millions also of Larks and Starlings during the week. A great many Hedge Sparrows and Blue Tits were also observed in the hedges at Easington.

Cygnus sp.? **Swan.** Oct. 26th. Six, all adults, passed over Thoresby parish, in North Lincolnshire.

Alauda arborea Linn. **Woodlark.** Oct. 27th. One shot near the Spurn. The Woodlark must be considered a rare migrant in the district.

Linota linaria (Linn.)? **Mealy Redpole.** Oct. 30th. A flock on the Humber side on Easington fitties; one was shot, and another also on the 28th. On the 8th of November I saw some on the fittie-land near the Spurn with Linnets, and on heads of *Aster tripolium*, four on a rail fence, others on Kilnsea Warren, near the pond. In flight some show a very white rump, and this is as distinctive a feature as in the Curlew Sandpiper. They are very wild and most difficult to observe, even with a glass, rising and going off on the least alarm. Subsequently I had an opportunity of examining the skins of two at Mr. Loten's house, at Easington, one, a most beautiful male, with rose-coloured breast and rump, the latter without any dusky streaks; the second had a white rump, also without streaks. These are a slightly larger bird than those obtained at Spurn in 1881 (three skins of which are now before me), and the tail is more deeply forked. I have also an Heligoland example of an adult male, equally as brilliant as the one in Mr. Loten's possession, but having the rump streaked throughout with brown—as is the case with the examples obtained at Spurn in 1881. I am inclined to think these Easington birds of this autumn have come from high northern latitudes, and that they are mostly referable to the *Linota exilipes* of Coues, a race, or perhaps sub species, closely allied to *L. hornemanni* found in Greenland.

Otocorys alpestris (Linn.). **Shorelark.** Oct. 30th. First occurrence this season on the coast. On November 7th, a flock

of eighteen seen in a locality where they regularly occur each winter.

Corvus corax Linn. **Raven.** Mr. Jalland, of Hull, who was shooting at Kilnsea, told me that he saw a Raven come in on Nov. 5th, in advance of a flock of Grey Crows; the size in comparison with the Crows was very marked.

Picus major Linn. **Great Spotted Woodpecker.** One, which I have, was shot at Welwick, near Easington, Nov. 3rd. It is a young male, with the red on the crown and occiput much broken into with black. Another, also a male, was killed at the same date at Roos, in Holderness.

Plectrophanes nivalis (Linn.). **Snow Bunting.** Nov. 8th. I saw some very large flocks of old and young at Kilnsea to-day.

Hirundo rustica Linn. **Chimney Swallow.** Nov. 8th. I saw two on Kilnsea Warren on passage from north to south, and in both separate cases with Snow Bunting—a curious combination of spring and winter visitors. One was seen at Grainsby on Nov. 13th.

Colymbus septentrionalis Linn. **Red-throated Diver.** Nov. 8th. Noticed several on the sea to the east of Spurn.

NOTES—BIRDS.

Marsh Harrier in Lincolnshire.—On the 30th September last year (1890), I obtained a Marsh Harrier (*Circus æruginosus*) in a poulterer's shop in Holborn. It was in its first year's plumage, and the salesman told me that it had been shot in Lincolnshire.—EDGAR R. WAITE, The Museum, Leeds, 17th Nov., 1891.

Cirl Bunting Nesting near Masham.—On August 24th, 1891, I sent what I took to be a young Cirl Bunting (*Emberiza cirlus*) to Mr. Eagle Clarke, of the Museum of Science and Art, Edinburgh, and which has since been identified by him as being such. This was taken by me from a nest found on August 20th, in a young plantation of fir and spruce, within 200 yards of Burton House. The nest was placed in a Scotch fir, at a distance of about two feet from the ground, and was shrouded in tall grass, which had grown up into the lower branches. It closely resembled that of the Yellow-hammer, and was also forwarded to Mr. Clarke, the young birds having just left it.

I was attracted to the spot by the shrill note of alarm of the hen bird, which was perched upon a neighbouring tree, having its beak full of insect food, with which it was feeding the fledglings. After searching about, I soon discovered a young bird perched upon some tall grass near the tree containing the nest, which I secured and did not search further, fearing I might tread upon some of the others. I may mention that in the autumn of 1886 I turned down a pair of Cirl Buntings, which I had purchased from near Newton Abbot and kept in confinement for some months; but as they were very wild and shy from the first, and did not settle, I decided to give them their liberty. On September 5th, 1887, whilst procuring food for a tame Kestrel from a flock of Linnets and Yellow-hammers, I found that I had unknowingly killed a young male Cirl Bunting in mistake for a hen Yellow-hammer. This leads me to think that the pair let loose in the autumn of 1886 had reared a brood in the following spring, to which the young male shot in the autumn of 1887 belonged, and that they have been the means of introducing a new species to the fauna of this district.—BASIL J. CARTER, Burton House, Masham.

Naturalist,

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ARACHNIDA AND MYRIOPODA, 1884-1891.

COMPILED BY WM. DENISON ROEBUCK, F.L.S.

ANON. [not signed]. **Yorkshire.**

Yorkshire Folk-lore: with Notes Comical and Dialectic ['the other day I knocked a spider from my face, and a little girl, standing by, remarked, "You are going to have a fortune"']. Yorksh. Folk-Lore Journal, Part 1, Oct. 1885, p. 2.

ANON. [not signed]. **York S.W.**

Yorkshire Dialects [words used in Calder Vale, from Wakefield upwards: arran = spider; arrandweb = spider's web]. Yorksh. Folk-Lore Journ., Part 1, Oct. 1885, p. 13.

ANON. [signed 'I.B.']. **Yorkshire.**

Spiders [unlucky to kill them; money-spinners betoken good luck, etc.]. Yorksh. Folk-Lore Journ., Part 2, Jan. 1886, p. 22.

ANON. [not signed]. **York S.W.**

Calder-Vale Words [as used from Wakefield upwards; Cock-web, cob-web, arrand-web = spider's snare]. Yorksh. Folk-Lore Journ., Part 7, Jan. 1887, p. 110.

ANON. [signed 'R.L.']. **Durham.**

Encounter between a Spider and a Wasp [described; took place at Durham; no specific names given]. Field, June 9th, 1888, p. 840.

J. BATALHA-REIS. **Cheviotland.**

Note on the Plants and Insects observed at the Wooler Meeting [Sept. 16th and 17th, 1887: *Gamasus coleoptratorum* L., parasitic on *Geotrupes sylvaticus* Fab. at Langleyford]. Nat. Hist. Trans. Northumb. Durh. and Newc., Vol. 10, part. 1 (1888), p. 201.

O. P. CAMBRIDGE. **York Mid W. and S.W.**

Pseudoscorpions new to Britain [*Chernes nodosus* from Bradford and Leeds; details given]. Nat., Dec. 1884, p. 103.

O. PICKARD-CAMBRIDGE. ?

On a New Species of Hæmaphysalis, C. L. Koch, **imported into England by Syrrhaptes paradoxus** [this acarid sent by Prof. A. Newton and by Mr. John Cordeaux; locality not stated]. Ann. and Mag. N.H., Sixth Series, No. 17, May 1889, Vol. 3, p. 406 and woodcut.

T. D. A. COCKERELL. **Cheshire.**

A September Walk through . . . Cheshire . . . [*Polydesmus complanatus* between Knutsford and Chelford, Sep. 11th, 1885]. Nat., Feb. 1886, p. 57.

W. W. FOWLER. **Linc. N. or S.**

[Exhibition of a number of minute *Acari*, which had been doing injury to fruit trees near Lincoln]. Proc. Ent. Soc. Lond., Oct. 6th, 1886, p. xlvi; Nat., Nov. 1886, p. 348; etc.

HILDERIC FRIEND. **Cumberland.**

The Life-history of the Eucharis Mite [(*Rhizoglyphus echinopus*) as observed attacking a florist's bulbs at Carlisle]. Wesl. Nat., July 1889, pp. 129-134 and plate.

HILDERIC FRIEND. **? Cumberland.**

The American Cockroach [incidentally mentioning *Theridion tepidariorum* in a conservatory, presumably near Carlisle]. Sci. Goss., Aug. 1890, p. 177.

W. A. GAIN. **Notts.**

Centipedes [giving his experience of *Geophilus electricus*, presumably in Notts.]. Sci. Goss., March 1889, p. 70.

C. F. GEORGE. **Linc. N.**

Arrenurus [a species found, presumably near Kirton-in-Lindsey, on 3rd Aug., 1885, which the recorder feels disposed to call *A. luteus*, if not already named]. Sci. Goss., March 1886, p. 68.

C. F. GEORGE. **York S.E.**

The Yorkshire Naturalists' Union at Spurn Point [3rd Sept., 1884; *Bdella hexophthalma* noted; new to Britain]. Nat., Nov. 1884, p. 92.

C. F. GEORGE. **Linc. N.**

Laelaps arvolica. Parasite of Water Rat (*Arvicola amphibius*) [at Alford, found by J. E. Mason; two figures of the parasite given]. Sci. Goss, Jan. 1889, p. 6.

C. F. GEORGE. **? Linc. N.**

Parasites on Rats and Mice [*Lælaps arvolica* George on *Mus sylvaticus*; locality not given, possibly Kirton-in-Lindsey]. Sci. Goss., May 1889 p. 116.

T. GIBSON-CARMICHAEL. **Cumberland, Westmorland.**

A Chapter on the Centipedes and Millipedes [giving details of localities and habitat of *Lithobius variegatus* in the Lake District, from which area *L. forficatus* is apparently absent]. Nat. Monthly, Sept. 1887, p. 13.

H. H. HIGGINS. **Lanc. S.**

President's Address. Luminosity [including observations made on *Geophilus electricus* in his garden at Rainhill, which affords a considerable number]. Proc. Liverp. Nat. F. Club for 1888 (publ. 1889), p. 19.

H. WALLIS KEW. **Linc. N.**

Spiders at Louth, Lincolnshire [4 species named by O. P. Cambridge; *Epeïra umbratica*, *Clubione brevipes*, *Trochosa ruricola*, and *Amaurobius fenestralis*]. Nat., June 1886, p. 170.

H. WALLIS KEW. **Linc. N.**

A Half-Day's Ramble on the Lincolnshire Coast [at Mablethorpe, April 3rd, 1886; *Tibellus oblongus* (named by O. P. Cambridge) noted]. Nat., June 1886, p. 171.

H. WALLIS KEW. **Linc. N.**

Louth Naturalists' Society [*Lycosa lugubris*, *Walckenaera acuminata*, and *Atta pubescens* noted as taken]. Nat. World, Aug. 1886, iii. 158.

H. WALLIS KEW. **Linc. N.**

Evenings in Spring [near Louth; *Julus terrestris* noted]. Nat. World, Sep. 1886, iii. 161-162.

H. WALLIS KEW. **Linc. N.**

Chelifer DeGeerii Koch near the Lincolnshire Coast [at Mablethorpe, 2nd Oct., 1886; identified by O. P. Cambridge, who had before only received it from Hastings]. Nat., Nov. 1886, p. 339.

H. WALLIS KEW. **Linc. N.**

Chrysis ignita preyed upon by Xysticus cristatus [at Grisel-bottom, near Louth]. Ent. Mo. Mag., Nov. 1886, xxiii. 136.

H. WALLIS KEW. **Linc. N.**

Natural History Rambles. No. 1.—In the Woods [near Louth; the capture of *Epeïra scalaris*, *E. diadematа*, *Zilla atrica* (= *Ep. calophylla* Blackw.), *Ep. quadrata*, and *Xysticus cristatus* noted]. Sci. Goss., Feb. 1887, p. 31.

H. WALLIS KEW. **Linc. N.**

Spiders obtained in North Lincolnshire, 1886 [a list, with localities and observations, of 68 species and one or two varieties, all named by O. Pickard-Cambridge]. Nat., Feb. 1887, pp. 55-59.

H. WALLIS KEW. **Linc. N., Lanc. S.**

A year's Spider Hunting [in 1886, about Louth; numerous species mentioned, arranged by method of capture, as 'under bark,' etc.: casual references to *Tarentula miniata* at Southport]. Young Nat., April 1887, viii. 57-61.

H. WALLIS KEW. **Linc. N. and S.**

Lincolnshire Spiders [three new to the county list, *Argyroneta aquatica* Bl., *Linyphia vivax* Bl., and *Lycosa palustris* L.; and notes also on *Epeira scalaris*, *E. cornuta*, and *Ocyale mirabilis*; localities stated for all; determinations by O. Pickard-Cambridge]. Nat., Nov. 1888, p. 329.

J. M. KIRK. **York N.E.**

Yorkshire Naturalists at Gormire Lake and Thirkleby Park [July 1887; *Milnesium tardigrada* noted]. Nat., Aug. 1887, p. 241.

J. M. KIRK. **York Mid W.**

The Yorkshire Naturalists' Union at Harrogate [13th July, 1889; the microscopic forms observed included *Atax histrionicus* (*Hydrachna histrionica*) and *Tardigrada*]. Nat., Aug. 1889, p. 244.

JAS. EARDLEY MASON. **Linc. N.**

Parasites [*Laelaps arvolica*] **on the Water Vole** [at Alford, Lincs.]. Nat., Feb. 1889, p. 60.

A. D. MICHAEL. **Derbyshire.**

Three new parasitic Acari discovered in Derbyshire in autumn, 1888; *Myocoptes tenax* Mich., parasitic on *Arvicola agrestis*; *Symbiotes tripilis* Mich. on *Erinaceus*; and *Goniomerus musculinus* Mich. on *Arvicola agrestis*]. Proc. Linn. Soc., Feb. 5th, 1889; Zool., March 1889, p. 112.

ALBERT D. MICHAEL. **Linc. N.**

British Oribatidæ. . . . London: printed for the Ray Society. MDCCCLXXXIV. [an octavo volume of 336 pages, and plates i.-xxiv. and A-G; this valuable work contains the following North of England records: *Oribata quadricornuta* Michael, p. 251, 'Mr. C. F. George has found this species at Kirton-in-Lindsey, Lincolnshire'; *Cepheus bifidatus* Nic., p. 291, 'I only know this species from four specimens; one was sent me by Mr. George, of Kirton-Lindsey, and was somewhat injured': and mentions a paper by Dr. George Johnston: 'The Acarides of Berwickshire specifically described'; Trans. Berw. Nat. F. Club, vol. ii. 1849, pp. 221-289, vol. iii. 1853, p. 113].

A. D. MICHAEL. **Cumberland, Westmorland.**

New British Oribatidæ ['*Cepheus bifidatus* is a rare species, very difficult to obtain . . . Last autumn at Keswick (Cumberland) I came across three or four living adult specimens' (p. 386); *Notaspis serrata*, sp. nov., 'I have taken it more abundantly at Ambleside, Westmorland, and Keswick, Cumberland' (p. 390); *Damaeus sufflexus*, sp. nov., 'I have found a single specimen at Keswick, Cumberland' p. 395]. Journ. R. Micr. S., June 1885, v. 385-397.

ALBERT D. MICHAEL. **Cumb., Westm., Isle of Man, York Mid W.**

British Oribatidæ. . . . Vol. II. London: Printed for the Ray Society.—MDCCCLXXXVIII. [an octavo volume of pp. xii. + 337-657, and plates xxv.-liv.; this volume contains the following north-country records: *Notaspis serrata* Mich., '. . . . found . . . and more abundantly at Ambleside (Westmorland) and Keswick (Cumberland)' (p. 369); *N. monilipes* (Mich.), . . first found . . in some material sent to me from near Leeds' (p. 385); *Damaeus sufflexus* Mich., 'I have since found a single specimen at Keswick (Cumberland)' (p. 416); *Hermannia reticulata* Thorell, . . 'received . . from . . the Isle of Man' (p. 461); *Nothrus*

segnis (Herm.), 'I have found them [adult and nymph] more on the Yorkshire and Cumberland hills than anywhere else' (p. 521); and *Pelops phæonotus* Koch, 'the specimens which were reared were found at Keswick in Cumberland' (p. 575)].

A. D. MICHAEL. **Derbyshire.**

On some unrecorded Parasitic Acari found in Great Britain [near Chatsworth, Derbyshire, summer, 1888; *Myocoptes tenax*, n. sp., on *Arvicola agrestis*; *Symbiotes tripilis*, n. sp., on *Erinaceus*; and *Goniomerus* (n.gen.) *musculinus*, n.sp., on *Arvicola agrestis*]. Journ. Linn. Soc., Zool., No. 123, Dec. 31st, 1889, xx. 400-406, and plate 26.

R. NEWSTEAD. **Cheshire.**

Insects, &c., taken in the Nests of British Vespidæ [include of Acarida, *Uropoda elongata* Halid., Ince, Cheshire; *Glyciphagus spinipes* at Chester 'Cop'; and a species of *Tiroglyphus*, Cheshire: details as to host, etc., given]. Ent. Mo. Mag., Feb. 1891, p. 40.

GEORGE W. OLDFIELD. **York Mid W. and N.E.**

Epeïra diadema and Salticus scenicus in Yorkshire [found on Ingleborough and at York respectively]. Nat., March 1884, ix. 137-138.

FREDERICK O. PICKARD-CAMBRIDGE. **Cumberland, Cheviotland.**

Descriptive Notes on some obscure British Spiders, with Description of a New Species [begins by mention that *Amaurobius fenestralis* Stroem, *Lycosa agricola* Th., *Cryphœca silvicola* Blackw., *Cœlotes atropos* Walck., and *Tmeticus scopiger* Grube, all rare in the extreme south of England, are abundant in Cumberland; *Leptyphantes zebrinus* Menge, Cumberland, described; *L. tenebricola* Wider, very common, described; *L. pinicola* Simon, described, four males and one female (new to Britain) taken, 18th Sept., 1890, beneath stones on the steep sides of Swirrel Edge, close to summit of Helvellyn, where they were apparently plentiful; *Tmeticus niger*, sp. nov., described, ten taken, 18th Sept., 1890, beneath loose stones on summit of Helvellyn, females usually beneath webbing; *Micryneta sublimis* Cambr., Cheviot Hills, and described in a list of Araneidea and Phalangidea of Berwickshire and Northumberland, in Proc. Berw. N.H. Club, 1875, vii. 314; found, Sept. 1890, beneath stones on steep sides of one of the passes of Helvellyn, seven or eight of both sexes]. Ann. and Mag. N.H., Jan. 1891, Sixth Series, vii. 69-87, and plate 2.

G. PULLEN. **Derbyshire.**

Notes from Derby [capture of *Epeïra quadrata*]. Young Nat., Oct. 1885, p. 239.

HERBERT STONE. **Notts.**

[Nidus of Epeïra fusca from Sherwood Forest, exhibited to Birmingham N.H.S.]. Midl. Nat., July 1889, p. 170.

E. L. TROUESSART. **Durham, Northumb., York N.E.**

Synoptical Revision of the Family Halacaridæ [*Rhombognathus seahami* (Hodge), Seaham Harbour, littoral zone; *R. nigrescens* Brady, a single specimen in a pool of fresh water on the rocks, Northumberland (Brady); *R. minutus* (Hodge), Seaham, littoral zone (Hodge); *Simognathus sculptus* (Brady), Durham and N. Yorkshire, Robin Hood's Bay (Brady) at 35 fathoms; *Halacarus striatus* Lohm., North Sea, upon *Thuiaria thuia*, off Newcastle-on-Tyne (Giard); *H. rhodostigma* Gosse, North Sea, Northumberland; *H. oculatus* Hodge, North Sea, Seaham (Hodge); and *Leptognathus falcatus* Hodge, laminarian and coralline zones, Northumberland (Hodge) noted: localities not altogether reliable, author seeming to think Seaham is in Northumberland]. Ann. and Mag. N.H., Sixth Series, No. 26, Feb. 1890, vol. 5, pp. 172-192.

TUFFEN WEST. **York Mid W.**

The Zebra Hunting-Spider—Salticus scenicus [refers to seeing it in old time, 'on the steps leading up to our father's warehouse, in dingy, smoky, sooty Leeds!']. Journ. of Micros. and Nat. Sci., Jan. 1884, iii. 38.

ARE THE SAME SPECIES OF BIRDS MORE PROLIFIC IN NORTH THAN IN SOUTH AND MID EUROPE?

JOHN P. THOMASSON,

Bolton, Lancashire.

Mr. Robert Collett, in his Review of the Bird Fauna of the neighbourhood of Christiania (1864), states the above as a fact, and gives as one instance the Whinchat, the number of whose eggs he says is oftener seven than six, whereas in South and Mid Europe they seldom number more than six, and often only four are laid.

He also states that the eggs of the Chiffchaff are 'nearly always eight in number,' whereas Yarrell says 'usually six,' the number contained in the only two nests I have myself seen.

Of the Willow Warbler, Collett states the eggs to be 'nearly always seven,' Yarrell six or seven, and though Seebohm says 'five to eight,' it is possible that the latter figure refers to his Siberian experience. It would be interesting to know if any of your readers have found in this country eight eggs in the nests of the Willow Warbler, Wood Wren, or Chiffchaff, or seven eggs in those of the Tree or Meadow Pipit. In Norway last year I was surprised to flush a Meadow Pipit from seven eggs, but I found that a friend in the same district had also found two nests with seven in each. Other nests I found the same month contained five (perhaps six), five, six, six, and six eggs, or eggs and young. I have only touched upon the subject as one of some interest. It would need an extensive series of statistics to enable one to pronounce any opinion upon it.

Mr. Collett states that in Norway the Meadow Pipit and Gray-headed Wagtail go up on to the fells to nest, rarely doing so in the lowlands, as the former commonly does in England, and the latter on the Continent.

The Brambling, a bird nearly allied to the Chaffinch, but which only nests in the north, certainly lays more eggs than the latter bird. Seebohm says, 'Six is the usual number of eggs, sometimes there are only five, and occasionally as many as seven.' This agrees with my own experience in Norway, where I have found one nest at least with seven eggs, a friend found another last year with seven, Wolley also found a nest with seven (in Lapland?) and another friend, while with me in Norway, found a

nest with eight eggs. Of the Chaffinch in Norway, Collett says: 'Eggs, generally five, seldom four;' which, as to England, would be put more accurately perhaps as 'four or five.'

Collett mentions finding a nest of the Redstart on the Dovre Fell, Norway, with nine eggs, the usual number in England, according to Seebohm, being 'five or six, occasionally seven, and even eight.' Hewitson says, 'five to eight.' Speaking of the Christiania district, Collett says: 'The eggs are nearly always seven in number, sometimes only six, seldom eight.' He appears never to have found as few as five. As to the Black Redstart, the nearest allied species, which does not nest in the north, its eggs, according to Seebohm, are usually five, 'sometimes only four are laid; and six, and even seven, have been recorded.'

Of the Robin in England, according to Hewitson, 'the eggs are mostly four or five, sometimes six, and even seven in number.' According to Seebohm 'the eggs of the Robin are from five to eight, but probably six may be taken as an average clutch.' Whereas Collett (Christiania district) says: 'The number of the eggs is as often seven as six,' thus never supposing the bird to lay as few as five.

Of the Garden Warbler, Hewitson says: 'The eggs are four or five.' Seebohm: 'Four or five, in some cases as many as six;' whereas Collett, again in Christiania district: 'Oftener five than six,' thus mentioning five as the minimum number.

Of the Whitethroat Hewitson says: 'The eggs are four or five and sometimes six in number;' and Seebohm: 'From four to six;' whereas Collett says: 'The eggs are nearly oftener six than five in number.'

The word 'nearly'—in Norsk 'naesten'—seems to have got in by mistake, or I have failed to translate it properly.

Seebohm says the eggs of the Wren 'vary from four to six, and even eight or nine in number. Clutches of still larger numbers are on record, but are very exceptional.' Hewitson says: 'Notwithstanding the number of eggs which the Wren has been said to lay, I have never succeeded in finding more than eight, and rarely more than seven.' Collett says: 'The eggs are generally eight in number.'

Turning to another genus, Hewitson says that the eggs of the Red-backed Shrike 'are four or five in number;' Seebohm, 'from four to six;' while Collett says of the Christiania district: 'The eggs are oftenest six, sometimes only five in number.'

My own experience of this bird is that in Surrey I have flushed birds from two nests with five eggs each, and found another nest with seven eggs. At Wiesbaden, Germany, I have flushed birds from five

and from six eggs, and found a nest with five young, while in a single hedge in Jutland a friend and myself found, on the 11th June, nests from which we flushed the birds containing respectively seven and four eggs, and seven callow young. This was in North Jutland, latitude about $56\frac{3}{4}^{\circ}$, whereas Christiania is in latitude 60°, Surrey $51\frac{1}{4}^{\circ}$, and Wiesbaden 50°. The evidence in this case is therefore very inconclusive.

A friend tells me he has once (or twice?) found five eggs in the Curlew's nest in England.

Since writing the above I have come upon the following remarks by Mr. Meade Waldo in the 'Ibis' for 1889, which it may be of interest to quote:—

'I am much struck by the small number of eggs laid by many birds here' (Teneriffe). 'I have never seen more than three eggs in a Blackbird's nest, very often only two, and frequently one. *Phylloscopus rufus* (Chiffchaff) lays four eggs, occasionally five, often only three; the Robin generally three, often only two, occasionally four or five. The egg of the Robin is very richly marked and large, and is as different from the egg of our Robin as the bird itself is. The Gold-crests (*Regulus cristatus*) lay but five eggs, often only four; the egg is exactly like our bird's, but I often find a double-yolked one.'

NOTES AND NEWS.

A type collection of British Coleoptera is being formed for the Museum at Bolton-le-Moors by Mr. C. E. Stott, of Manchester Road, Bolton, Lancashire, who will be glad to receive assistance from willing coleopterists.

It gives us the greatest pleasure to announce that our valued friend and contributor, the Rev. H. A. Macpherson, M.A., is issuing prospectuses of a new work, 'A Vertebrate Fauna of Lakeland,' which he defines as including Cumberland and Westmorland with Lancashire North of the Sands. It is to be in one volume, with illustrations, and to have an introductory chapter on the topography of the district, by R. S. Ferguson, F.S.A. Mr. Macpherson aims at supplying as complete an account of the vertebrate animals of Lakeland as our present state of knowledge renders possible. The materials he has brought together during the labours of nine years embody much fresh information. While his first endeavour has been to make a contribution of real scientific value to British zoology, he has not neglected such records or descriptions of a more popular nature as may attract to it the attention of the sportsman and the general reader. The prolegomena will include biographical sketches of the chief Lakeland naturalists, an account of cave deposits and other Pleistocene remains, a sketch of the earliest local museums, a summary of the variations of colour observed in local specimens, a description of the faunal changes, and other general matters. The price to subscribers will be 21s., and as soon as a sufficient number of names have been received by the author to warrant its issue the printing will be begun, and the book published by David Douglas, Edinburgh, with whose series of Vertebrate Faunas of Scotland, by Messrs. Harvie-Brown and Buckley, this volume on Lakeland is apparently to be uniform, or at any rate similar. The price is to be raised as soon as the subscription list is closed.

NOTES—ORNITHOLOGY.

Late Occurrence of House Martins at Boroughbridge.—I saw three House Martins (*Chelidon urbica*) flying about the streets of Boroughbridge this afternoon. I watched them for some time, and they several times came past my carriage within a few yards. I never saw any so late before so far north.—RD. PAVER-CROW, Ornhams Hall, Boroughbridge, 19th November, 1891.

Grey Phalarope near Harrogate.—On October 16th, a specimen of the Grey Phalarope (*Phalaropus fulicarius*) was shot in a marshy field at Beckwithshaw, near Harrogate. It is a male bird, and was shot with a catapult. When seen it was exceedingly tame, as it allowed several shots to be fired before it was secured.—RILEY FORTUNE, Harrogate, Nov. 8th, 1891.

Grey Phalarope at Ackworth.—On the 22nd of October last, Mr. C. I. Evans, of Flounders College, Ackworth, sent to me, for identification, the much mutilated skin of a bird. It proved to be a Grey Phalarope (*Phalaropus fulicarius*), in winter plumage. Mr. Evans has since forwarded me the following particulars as to its capture. The bird was shot by the side of a public highway close to Ackworth, by George Moxon, on the 16th of October. Several persons had observed the bird by the roadside for some hours previous to its being shot, and had noticed how very tame it was. My informant observes: 'After passing through the hands of two or three people the skin eventually came into mine in the same condition as when I forwarded it to you.'—EDGAR R. WAITE, The Museum, Leeds, Nov. 9th, 1891.

Flamborough Bird Notes.—Since Oct. 21st, we have had great arrivals of Woodcocks (*Scolopax rusticola*), Hooded Crows (*Corvus cornix*), and flocks of Jackdaws (*C. monedula*), seen coming in from the sea. Fieldfares (*Turdus pilaris*), Redwings (*T. iliacus*), Snow Buntings (*Plectrophanes nivalis*), and Shore Larks (*Otocorys alpestris*), have arrived on the Headland. Some four or five Great Shrikes (*Lanius excubitor*), also half-a-dozen Peregrine Falcons (*Falco peregrinus*), and, strange to say, two large Eagles (*Haliaetus albicilla*) have been seen about the Headland. Nov. 17th, I had brought in, to preserve, a splendid specimen of the Waxwing (*Ampelis garrulus*), shot by Mr. John Huddleston, farmer, Flamborough. Nov. 18th, just at dusk, I saw two Swallows (*Hirundo rustica*) flying about the streets of Flamborough. Innumerable quantities of sea-birds have been seen along the coast, and the fishermen inform me they have seen immense flocks of Kittiwakes (*Rissa tridactyla*). At the North Landing, Mr. Saltfleet shot a Sabine's Gull (*Xema sabinii*), a very fine specimen. Three large Whales have been cast upon the beach, also another one seen off the South Landing.—MATTHEW BAILEY, Flamborough, Nov. 20th, 1891.

Buffon's Skua at Workington.—On the morning of Monday, the 19th of the present month, after the extraordinary high tide of the previous midnight, which had invaded the lower parts of the town, doing considerable damage, I was walking along the beach on the north side of the mouth of the River Derwent, when I picked up the dead body of a bird, which I saw floating about among the surf and wreckage. Having but an indifferent acquaintance with sea-birds, and merely supposing the specimen to be a member of the Skua family, I forwarded a detailed description of the bird to my friend, Rev. H. A. Macpherson, M.B.O.U., of Carlisle, from whose reply I quote—'Your bird is probably Buffon's Skua (*Stercorarius parasiticus*), and very likely one which Mr. Thomas Mann shot at and lost. There have been about ten of these Skuas secured altogether, five young and five old birds. All that I have seen are of this species, and yours, no doubt, came with the rest, struck by a gale when migrating down Channel on October 16th.' The Mr. Mann here referred to is a very intelligent farmer, who lives about ten miles north of Workington, and has devoted a good deal of time and study to the ornithology of the Solway, assisted by his brothers, with the result that they possess a very fine collection of shore birds, shot and set up by their own hands.—W. HODGSON, Workington, October 30th.

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Printed by McCorquodale & Co. Limited, Leeds.

No. 186. JANUARY 1891.

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A

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